THE OIL WEEKLY

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The Oil Man's Calendar

AUG. 31 SEPT. 3	Twelfth Annual Field Conference and Joint Meeting, Kansas Geological Society and Rocky Mountain Association of Petroleum Geologists, Kit Carson Hotel, La Junta, Colorado.
SEPT. 14-16	National Petroleum Association, Hotel Traymore, Atlantic City.
27 OCT. 2	American Association of Petroleum Geologists, Mid-Year Meeting, El Paso, Texas.
OCT. 5-7	American Institute of Mining & Metallurgical Engineers, Fall Meeting, Petroleum Division, Plaza Hotel, San Antonio, Texas
10-13	North American Gas Tax Conference, Tulsa, Oklahoma.
10-14	American Gas Association, Atlantic City, New Jersey.
10-14	National Safety Congress, Petroleum Section, Stevens Hotel, Chicago, Illinois.
12-13	Indiana Independent Petroleum Association, Hotel Severin, Indianapolis, Indiana.
18	National Stripper Well Association and Oklahoma Stripper Well Association, Annual Meetings, Tulsa, Oklahoma.
19-21	Independent Petroleum Association of America, Tulsa, Oklahoma.
20-21	American Institute of Mining & Metallurgical Engineers, Petroleum Division and Industrial Minerals Division, Los Angeles, California.
27-29	Annual Convention, Texas Division, Mid-Continent Oil & Gas Assn., San Antonio, Texas.
NOV. 3-4	American Association of Petroleum Geologists, Pacific Section, Los Angeles, California.
14-18	American Petroleum Institute, (Annual), Stevens Hotel, Chicago
DEC.	Mid-Continent Oil & Gas Assn., Standing Tax Committees, Dallas, Texas.

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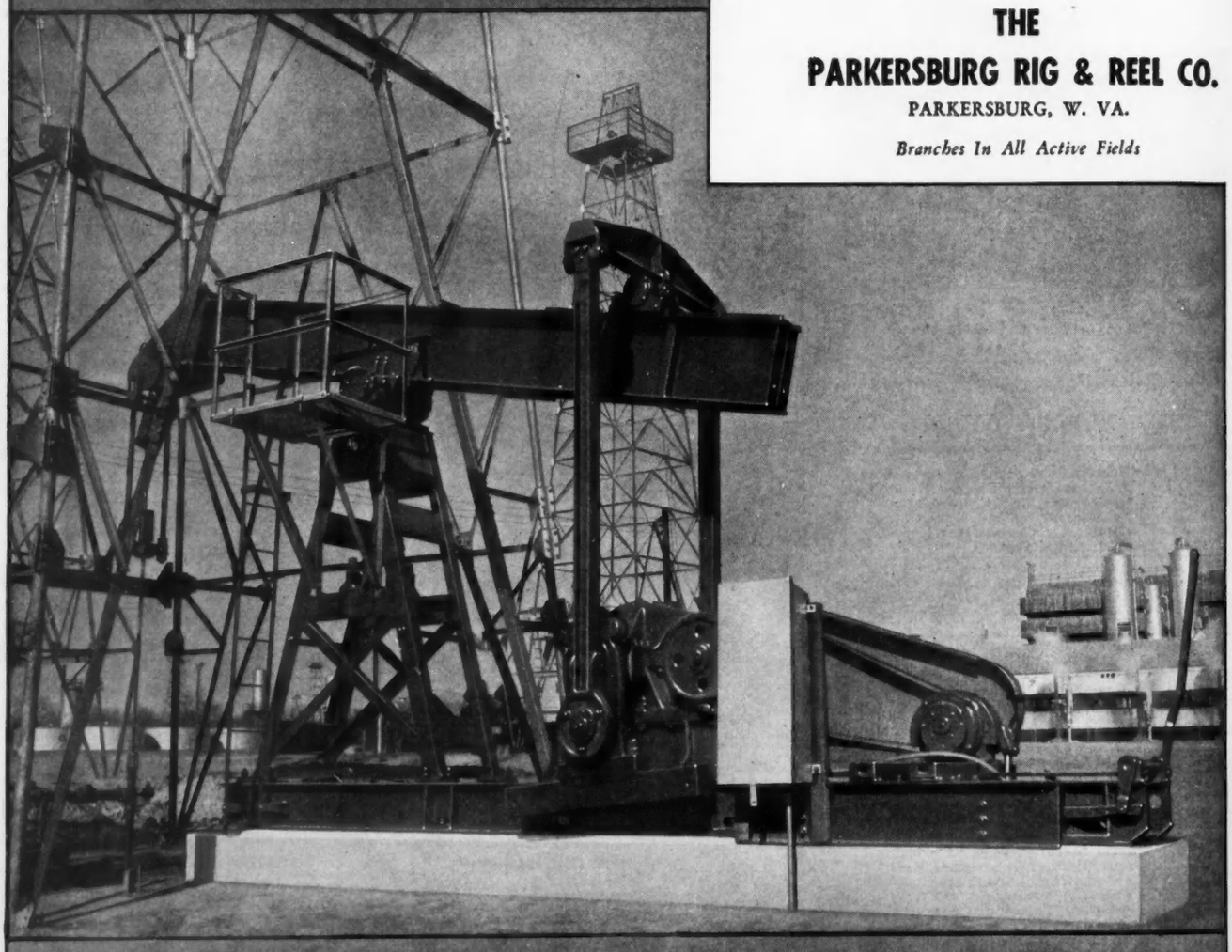


PARKERSBURG

PUMPING UNITS

This Week's Panorama

THIS week is expected to bring a clarification of the clouded market situation centering around East Texas.

Regarded as delaying a more definite showdown on the crude posting for the big field was the Texas run-off election of Saturday, August 27.

Texas Order for September Awaited

Following the election, it was felt, the Texas Railroad Commission would promptly issue its proration order for September; and the order was expected to influence major purchasers in their attitude toward the East Texas posting.

The Texas Railroad Commission had indicated last week that it might put fields of the state back on a 5-day production week after having allowed 6 producing days a week in July. And it was believed such action would assure the maintenance of the $1.35 crude posting for East Texas, despite the 15-cent reduction that had been made by several independent refiners.

The political consideration involved was the candidacy of Chairman C. V. Terrell of the Texas Railroad Commission for re-election. He had strong support from within the oil industry, as he was regarded as having pursued consistently a conservative and constructive policy in oil proration, and it was believed that general crude price cutting on the eve of the election might damage his candidacy. In that connection, Terrell and his supporters charged last week that the 15-cent cut by the several companies was aimed against the Terrell candidacy.

The election being over, an early showdown is expected on September allowables and the future East Texas crude price.

General Crude Market Seems Safe

In any event, the general Mid-Continent crude market outside East Texas is regarded as being fairly safe for the immediate future.

The East Texas price has appeared for several months to be somewhat out of line with postings in competing fields, and an East Texas cut, of only local significance, would not have been surprising at any time in the past few months.

Price Reduced by Independent Refiners

East Texas Refining Company, which initiated the reduction of the East Texas posting from $1.35 to $1.20 a barrel August 19, was connected a short time previously with 332 wells in the field that had combined allowable production of 5669 barrels daily, including only 857 barrels of controlled production and 4812 barrels of purchased oil. Freeman W. Burford of Dallas is head of the company.

Longview Gathering System, pipe line unit of the Danciger interests, first to follow the leader in the 15-cent reduction, was connected with 311 wells that had aggregate allowable production of 5217 barrels daily, including 603 barrels controlled and 4614 barrels outside oil.

Premier Oil Refining Company of Texas, owner of a skimming and cracking plant in the East Texas field at Willow Springs, effective August 23 also posted the $1.20 price. J. R. Parten is chairman of the board, and it is understood that much of the stock of the company is held by prominent land owners and royalty owners of the East Texas field. The company buys all the crude oil it processes, and has been purchasing around 2600 barrels daily.

Markets for East Texas Wells

Major companies last week were taking steps to absorb unconnected wells in the East Texas field. A late report indicated about 400 wells without a market, although not all were without connections, because of using temporary storage facilities.

The revived interest in well connections may be partially due to an anticipated 5-day production week, particularly in the East Texas field. A 5-day week does not provide enough oil for some major companies, and previously it made them draw heavily on storage.

Business Conditions Affect Oil Use

The oil industry and competing industries have continued to feel the reduced industrial activity this year.

Fuel oil consumption has been more than 10 percent lower this year than last year, due to smaller use in industrial production, and demand for lubricants has been lagging, for the same reason.

Production of electricity by the electric light and power industry of the United States at the middle of August still was running about 7 percent lower than last year.

Commodity Prices Set Back

Wholesale commodity prices have been steadily declining for several weeks, and are now back to the level of early July, and only a little above the year's low point that was reached in early June. Recent weakening of the average price has been due to declines for farm products and foods, chiefly grains, livestock, poultry, meats, fruits and vegetables. Small decreases have occurred also for chem-

Cooperation on Heaving Shale

THE movement being organized to study and combat the heaving-shale problem on a cooperative basis is one which should be welcomed by operators in those portions of the world where heaving shale has been responsible for tremendous losses.

In the Texas-Louisiana Gulf Coast area alone millions have been lost in trying to get through heaving shale. While some operators have been successful in a particular well in a particular area, a second well in the same area using identical methods has resulted in a lost hole.

Estimates on the amount of money unsuccessfully spent in trying to conquer heaving shale over a period of the last 38 years have run as high as $40,000,000. Elsewhere in this issue of THE OIL WEEKLY is published an appeal from H. H. Power, head of the Petroleum Engineering Department of the University of Texas, and chairman of a committee organized to work on the heaving-shale problem. He asks that operators provide his committee with information on their experiences. Some of the major companies have pledged their fullest cooperation already.

While it is not positively known that heaving shale over-lies reserves of great proportions, it seems to be the consensus of opinion of those who are well informed that very probably such reserves will be made available if heaving shale can be conquered.

Every well drilled into heaving shale in the past has been an adventure. Much of the information which has been published on the subject has only tended to show that which was not successful.

But, somewhere in the mass of experience gathered over a period of 38 years, there must be a great deal of practical information which if properly studied and correlated will aid in solving the problem.

Already enlisted in the movement to work on this problem are the University of Texas, United States Bureau of Mines and a number of operating companies who have had a costly field experience with heaving shale.

icals, drugs and house furnishing goods. The fuel and lighting materials group lately has advanced slightly.

Air Travel Larger This Year

Air travel has been more extensive this year than last year, although it was lagging behind last year's record in July. The 16 air lines reporting to the Air Transportation Association during the first seven months of 1938 flew 250,362,034 revenue passenger miles, or 14.4 percent more than the 218,745,476 miles flown in the similar period of 1937. These companies in July flew 42,208,362 revenue passenger miles, or 4.4 percent less than the 44,174,193 miles of July last year.

Labor Policies Differ Among Nations

The world today presents some widely different policies of governments toward working hours for employees.

In the United States, government promotes fewer hours of work per week, and federal law has prescribed a 40-hour week, plus minimum wages, affecting industries doing interstate business. Meanwhile, many advocate even shorter hours, with the same or higher pay. And largely drowned out is any voice that has the temerity to raise the question: Will not production decline and the standards of living suffer if working hours are too greatly reduced?

In Sweden the government recently passed a law making compulsory the granting of annual paid vacations.

The above instances reflect efforts to insure more leisure for workers, for which the price obviously must be proportionately less work and production; although sentiment in the United States is strongly in favor of paying that price.

In some other countries, however, the emphasis is not so much on leisure as on production. The outstanding example, of course, is Germany. The country's leaders have declared that the way to national strength and power is through self-sacrifice and work as well as united effort. To build highways, install and operate factories, provide munitions, expand and maintain an efficient army has required work. Practically all employable persons have been put to work, and now Germany has a shortage of skilled workers.

In France a 40-hour work week was made compulsory under the law, to appease workers who walked out in a wave of strikes. But Premier Edouard Daladier a week ago told his countrymen that the 40-hour week must be abandoned in order to strengthen national defense, foreign alliances, and the stability of the franc amid the current war clouds.

The premier and national defense minister, who came into power last April, is said to have the power to change the 40-hour week law by decree, although his power might be tested in November, when Parliament returns.

Oil Outlook Is Good in View of Indicated Recovery

More signs of trade upturn promise improvement of oil demand . . . Industry's current operations moderate, but stocks of refined oils too large

By L. J. LOGAN, Associate Editor

INDICATIONS of favorable business in the latter part of this year and during next year continue to accumulate.

The Bureau of Agricultural Economics, notably accurate in its forecasts during the past year, foresees a steady and gradual business rise in the fall and winter. The forecast is based on the indicated gradual increase in government spending on new construction projects, growing needs of consumers and producers for durable goods, and a favorable residential building situation. Significance is attached also to the limited financial deflation during the recession.

* * *

Auto Outlook Better

Especially promising for the oil industry are the indications of an impending revival in sales of automobiles.

K. T. Keller, president of Chrysler Corporation, has tentatively estimated that automobile production in 1939 will be from 25 to 55 percent larger than in 1938. The 1939 output is expected to be from 2,750,000 to 3,500,000 cars, as compared with a probable total of around 2,225,000 in 1938. Fulfillment of the forecast would carry the industry's operations in 1939 to the 1934 level or higher.

The American industry in 1934 produced 2,869,963 cars and trucks, and in 1935 turned out 4,119,811. The production in 1937 amounted to 5,016,437 units, largest output on record except that of 5,621,715 units in 1929.

The used car market has been improving lately, and prices are stiffening; and dealer inventories of new cars are decreasing steadily.

* * *

Oil Industry Affected

The expected larger automobile production in the latter part of 1938 and in 1939 may have important practical implications for the petroleum industry.

Better business for the automobile makers would be accompanied by stronger demand for gasoline and lubricants, and thus the industry would benefit.

But increased automobile production also would mean larger use of steel, which might affect prices and deliveries of steel to the makers of oil field and refinery equipment and similarly the prices and deliveries of manufactured equipment to the oil companies.

Furthermore, larger automobile production and sales might be expected to be accompanied by increased business activity and production in numerous other lines, and the oil industry, as buyer of equipment and materials, would be bidding increasingly against other buyers.

Steel operations currently are around 32 percent of capacity, having increased to the highest level of the year. Consumer buying has not yet registered a sustained upturn, but some increase is expected soon, particularly when the pending purchases by automobile manufacturers for the new model cars begin.

It appears quite conceivable that

Bureau of Mines Forecasts Reflect Trends of Demand
(Barrels of 42 U. S. Gallons)

MONTH	Total Demand for Domestic Crude	MOTOR FUEL DEMAND		
		Domestic	Export	Total
June:				
June, 1938, forecast	100,000,000	48,100,000	3,400,000	51,500,000
June, 1937, actual	105,274,000	48,580,000	3,085,000	51,665,000
Change from year ago	—5%	—1%	+10.2%	—0.3%
July:				
July, 1938, forecast	105,340,000	49,930,000	4,000,000	53,930,000
July, 1937, actual	111,387,000	50,704,000	2,962,000	53,666,000
Change from year ago	—5.4%	—1.3%	+35.0%	—0.5%
August:				
August, 1938, forecast	106,580,000	50,000,000	4,500,000	54,500,000
August, 1937, actual	113,148,000	49,597,000	3,771,000	53,368,000
Change from year ago	—5.8%	+0.8%	+19.3%	+2.1%
September:				
September, 1938, forecast	103,330,000	47,000,000	4,400,000	51,400,000
September, 1937, actual	110,962,000	47,245,000	4,456,000	51,701,000
Change from year ago	—6.9%	—0.5%	—1.2%	—0.6%

any oil companies that delay making needed purchases may be obliged some months from now to meet their requirements on rising markets.

Perhaps with these possibilities in mind, some of the important oil companies are going ahead with relatively large programs of capital expenditures this year.

* * *

Current Oil Situation

The oil industry's internal situation has undergone no material change for several weeks, having remained fairly satisfactory from the standpoint of operating levels, although inventories of refined products continue excessive.

Somewhat disappointing is the fact that oil demand has not appreciably improved. Consequently, despite curtailed crude production and refinery runs, the industry is not making much headway in cutting down surplus inventories of gasoline, fuel oil, and some other products.

Some doubt is arising, therefore, as to the outlook for the markets this fall and winter, and prices have become unsteady in some instances.

Crude price cutting has been limited to the 15-cent reduction of the East Texas posting during the past week by several independent refiners, and it remains to be seen whether the lower price will be generally adopted and whether any other districts will be affected.

The gasoline market has not been particularly firm in recent weeks, because of large inventories and somewhat disappointing demand, and it was further retarded last week by the East Texas crude price reductions.

* * *

Demand Still Lagging

Not very inspiring was the latest monthly forecast of oil demand by the Bureau of Mines, estimating September requirements.

Whereas the bureau had foreseen for August a slightly larger demand for gasoline than in that month last year, it predicted that September, 1938, requirements would be slightly smaller than those of September, 1937.

The forecast indicated that domestic demand for gasoline would be 0.5 percent smaller in September, 1938, than in September, 1937; that exports would be down 1.2 percent; and that the total gasoline demand would be off 0.6 percent.

The bureau had estimated a month before that domestic gasoline demand would be 0.8 percent larger in August, 1938, than in August, 1937; that gasoline exports would be up 19.3 percent, and that total gasoline demand would be up 2.1 percent.

* * *

Allowable Outlook

Strict curtailment of crude oil production in September is foreshadowed. The Oklahoma state allowable likely will be left the same in September as in August, judging by the recently indicated sentiment of the industry of the state and of the conservation officials. Oklahoma has been producing about 85,000 barrels a day less than the Bureau of Mines estimate of demand in August, and the bureau expects about the same demand to continue through September. Thus about the same degree of curtailment is promised in September as in August.

Kansas stuck close to the Bureau of Mines estimate of demand in August, and likely will do so again in fixing September allowables.

While it was not known late last week what Texas would do about September allowables, it appeared to be a reasonable assumption that a conservative program would be adopted, involving if necessary a resumption of Saturday shutdowns in addition to the current Sunday closings.

New Mexico's allowable in August has been about 5000 barrels daily lower than the indicated market demand, and while the forecast of requirements for September is only 700 barrels a day lower than for August, a somewhat larger reduction in the official state allowable is likely. For one of the important purchasers, Sinclair Prairie Oil Marketing Company, effective August 23, cut its nominations in Eddy County, New Mexico, 50 percent. The company had been taking 3800 barrels daily, according to the proration schedule, indicating it would make a cut of 1900 barrels daily in purchases. It was assumed that the New Mexico conservation commission would recognize the market situation and cut allowables to a level necessary to avoid pipe line proration by the purchasing companies.

* * *

Current Operations

Crude oil production and refinery runs are being held in favorable relation to current market requirements, and further withdawals of crude and gasoline from storage have been possible, although the gasoline stocks need further reduction, while fuel oil stocks, already excessive, continue to increase.

United States crude oil production in the week ended August 20 averaged 3,392,700 barrels daily, and was under indicated market demand, apparently permitting the taking of some crude from storage. The Bureau of Mines estimated that during August the demand for domestic crude oil, from wells and storage, would average 3,438,100 barrels daily, taking into account an expected withdrawal of gasoline from storage. The crude production in the week of August 20 was 9 percent lower than in the corresponding week last year.

Crude runs to stills were down 30,000 barrels in the week ended August 20, having averaged 3,265,000 barrels daily, or 4.3 percent less than in the comparable week last year.

* * *

Inventory Situation

Despite the slowing down of refinery operations and a 33,000-barrel increase in daily crude production in the week of August 20, more than a million barrels of crude oil was withdrawn from storage. Dropping to 286,251,000 barrels, the nation's crude oil stocks came down very near to the lowest level of recent years. When the crude stocks dropped to 285,211,000 barrels in the week ended January 23, 1937, they were at the lowest level since 1924. The present crude stocks are 7.2 percent smaller than those on hand at this time last year.

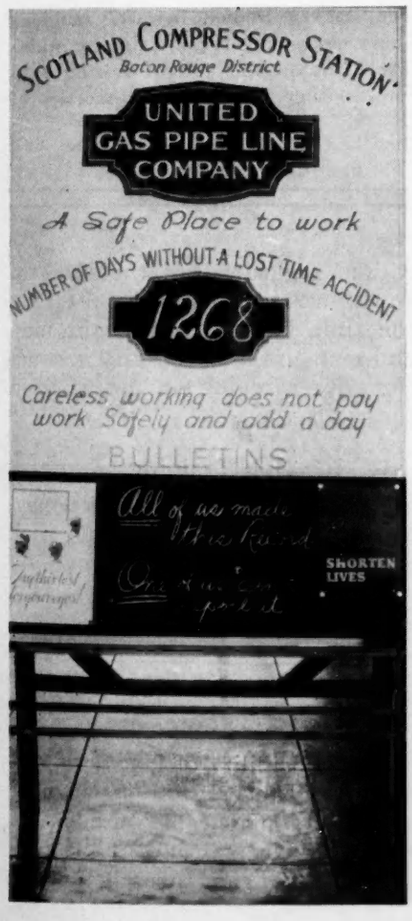
Gasoline stocks were reduced approximately 1,700,000 barrels more in the week ended August 20, having been lowered to 72,709,000 barrels. At that level they were 8.1 percent larger than one year previously. Yet the demand for gasoline has been running about the same as last year.

Fuel oil stocks increased again nearly a million barrels in the week ended August 20, rising to 147,180,000 barrels. That supply was one-third larger than the 110,493,000 barrels held a year previously. In contrast, fuel oil demand has been running more than 10 percent lower this year than last year.

Fundamentals of Accident Prevention

It is the foreman's responsibility for the control of accidents through establishment of correct operating practices

By C. L. HIGHTOWER,
Safety Director,
United Gas Pipe Line Co.



This attractive accident record and bulletin board, which was designed by a station chief engineer, is on display in the main engine room and serves as a constant reminder to all employees of the good record attained and the need for continual safety effort.

WHEN a job is done right, when it is well planned and carried out in an orderly manner, it is safe. We may say then that safety is dependent on the same factors which are necessary to good operations as a whole.

What are these factors? They may be summed up under the following headings:

1. Selection and Placement of Men.
2. Job Training.
3. Job Planning.
4. Care of Physical Property.

Since they play such an important role in our operations, let us further break down these headings and determine just what steps are involved in applying these principals to our everyday activities.

Selection and Placement of Men

In considering the problem of the selection of men the first question that arises is whether we are justified in taking the time to investigate the individual who is being hired for temporary work? The answer to this question, obviously, is yes. And for these reasons; first, it is usually the temporary employee who gives the most trouble from a safety standpoint. Sprained backs and other questionable accident cases come from this group. Also, a big majority of our accidents involve "green men" and if we can, by hand picking and weeding out, eliminate those with an accident record back of them and those who do not have the proper attitude, we can avoid many such accidents. It should be remembered that these accidents cause damage to equipment, slow up the work and run up the costs. Second, a large percent of the regular personnel is recruited from these temporary employees and we should, therefore, select the best material available.

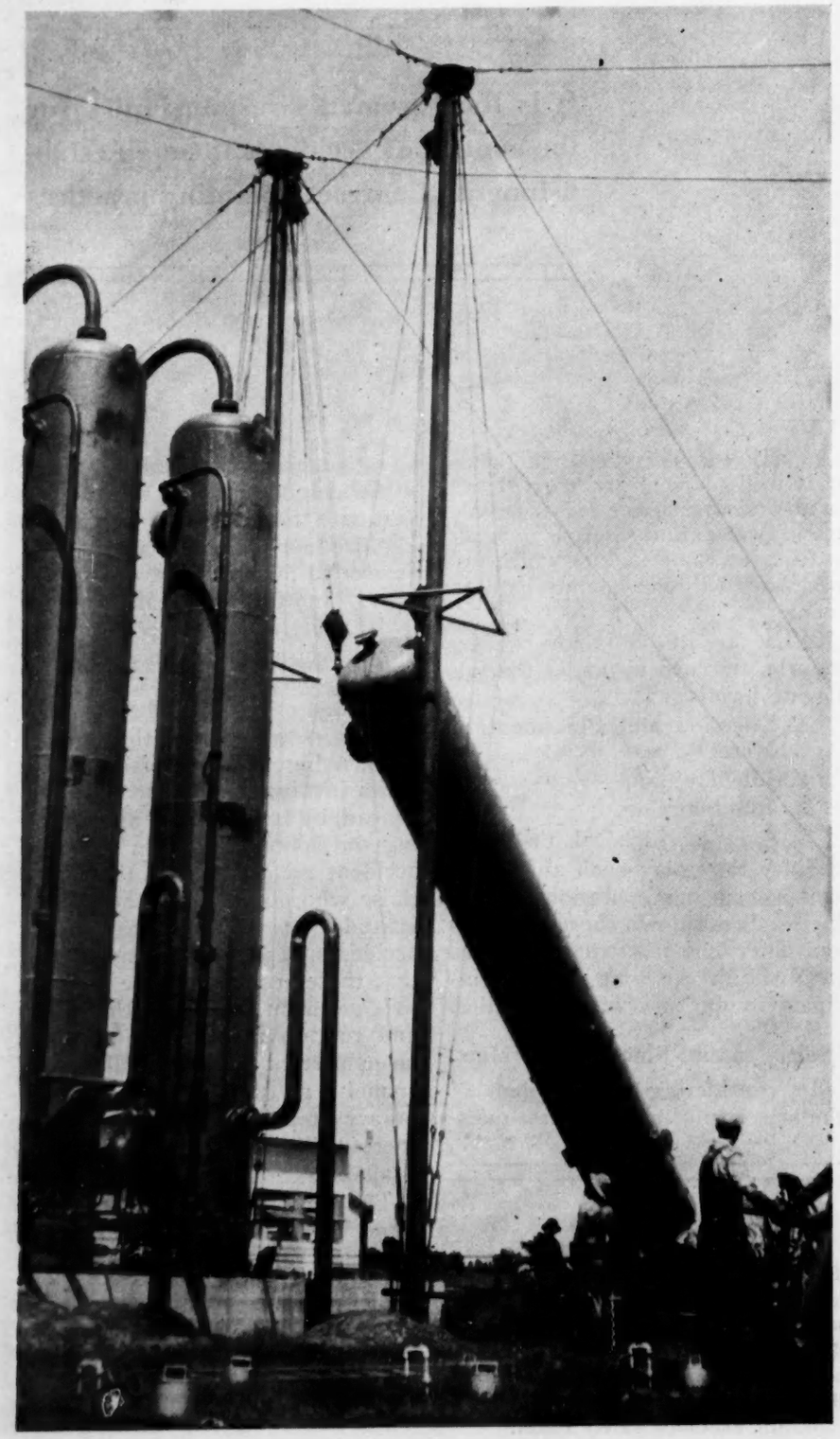
The next question in selection of men is what to look for in an applicant? What qualifications are necessary to success in our organization? Requirements will vary with each job and methods of evaluating qualifications will vary as between different supervisors. There are certain fundamental

qualifications which should be considered in each case, however. Among these are:

1. Past experience
2. Reputation for soberness and honesty
3. Special training for work
4. Physical ability to perform work
5. Apparent ability to "fit into" the organization and work harmoniously with others.

The new man is usually eager to make good and for this reason he is more susceptible to instruction and suggestions when he first comes on the job than at any other time. The company's requirements for safe working practices should be explained to him before he is assigned to work and he should be impressed with the need for harmony and cooperation. Detailed instructions as to the probable hazards of the work and the safe practices to follow should also be covered. Experience in the past has proved to us that the simple task of using a pick and shovel involves hazards with which many untrained men are unfamiliar. If instructions are necessary on such simple tasks, we can appreciate how much more necessary they are on more involved work where machinery and heavy tools and equipment are employed. We would not think of setting a gas engine on an insecure foundation with the hope of pumping oil from the well. If the new man is to function with efficiency and harmonize his efforts with those of his crew or department he must have a foundation to start from. Only the supervisor is qualified to lay that foundation for the new man by supplying the necessary information as to the requirements of the job and the responsibilities that it carries.

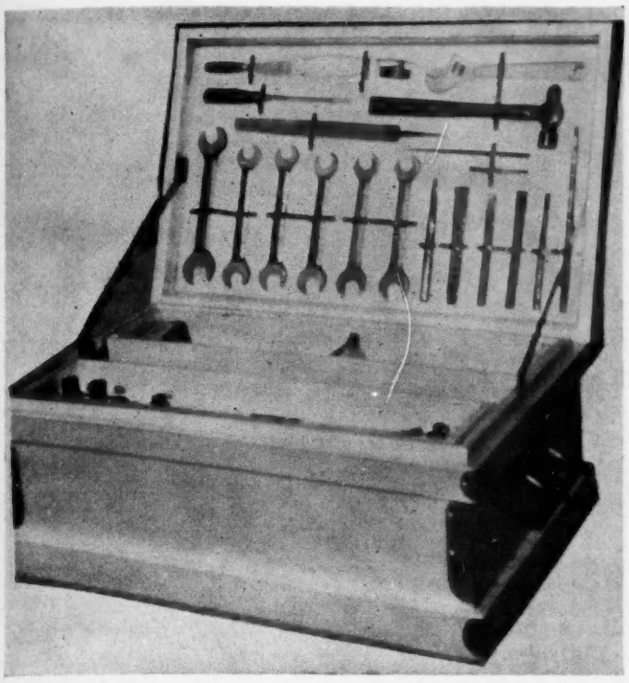
In summing up this problem of selecting and placement of men, we may well say that where there is a need for a man in the organization, regardless of the class of work, we are justified in taking the time to select the right man and give him the necessary instructions for carrying on the work in the right way.



The first requirement in Safely handling heavy equipment is good rigging, which is evident on this job of raising a 13 ton absorber during the construction of a gasoline plant.

Job Training

Every supervisor has three distinct responsibilities, managerial, supervisory and instructional. As a manager, he makes plans; as a supervisor, he sees that his plans are carried out by those under his direction; and as an instructor, he teaches correct work habits. Of the three none is more important than the responsibility of instructing or training. The crew or department with an unfavorable production record or a consistently high accident frequency is usually headed



Tools are protected against damage and can always be located in this kit, which was designed and built by a pipe line maintenance crew.

by a supervisor that is weak on teaching ability.

Methods of training will vary in accordance with the type of work and the amount of skill required for successful performance, but in every case, on all classes of work, it must be a continuous process.

There are four cardinal reasons why training is never finished.

1. New employees are continually coming into the organization. They are often inexperienced and unfamiliar with correct work habits. They must be be trained in the best known and established practices for doing the work.

2. Employees are being transferred from one job or one department to another. They too must have special training for the new work to which they are assigned.

3. Experienced employees must be reminded. They forget and sometimes develop habits of chance taking.

4. New processes and new equipment present new problems. There is nothing permanent but change and we must keep informed as to new methods and improved equipment if we are to meet and solve the new problems they present.

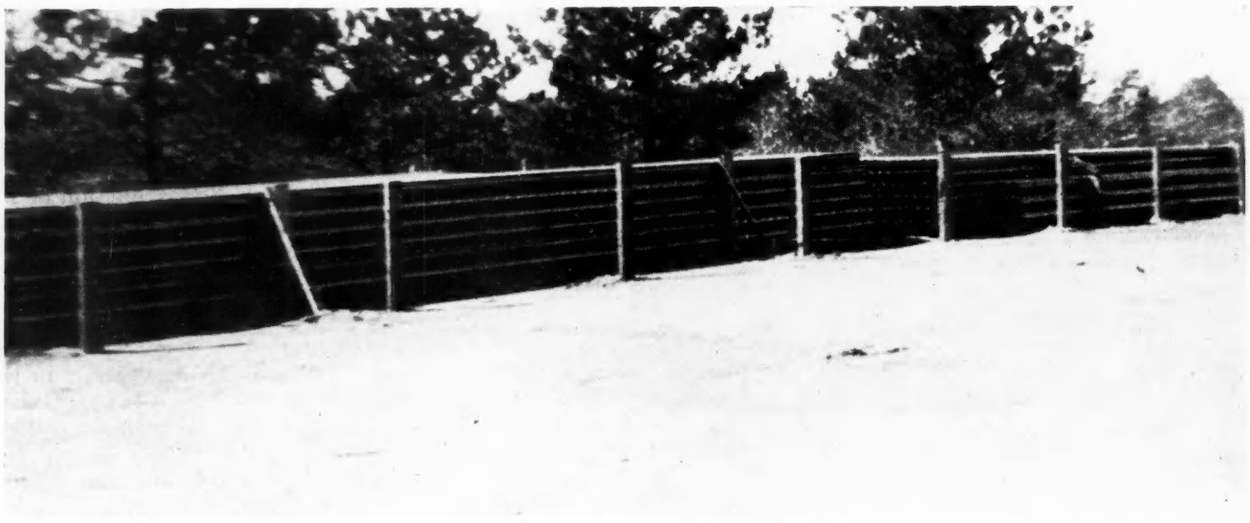
Perhaps no other function of supervision requires more painstaking effort and patience than does that of developing, in the employee, the proper mental attitude. Its accomplishment calls for the highest type of leadership. In order to develop this attitude in the mind of his men the supervisor must first develop such an attitude himself.

Following this, the next most important requirement of leadership is that of a code of fair play. A leading executive of the utility field recently said, "There are two things every man knows; when he he is being treated right and when his pay is short." Let us think about that for just a moment. Isn't it true? No matter what a man's nationality may be, regardless of his limited knowledge of the English language, or his lack of education; he knows when he is being mistreated and he knows when his pay is short.

What is the significance of this to the supervisor? It means that he can play no favorites. It means that he must deal fairly, honestly and courageously with his men. It means that he must temper firmness with mercy, that he must be understanding and helpful.

Also, we as leaders should always remember that a man does not work for pay alone. That, of course is necessary in order to exist and to supply his family with the things he wants them to have. But

Handling "hot dope" becomes a hazardous operation only when safe practices are ignored. Workmen must be protected with gloves, goggles, good shoes and face ointment to prevent burns from the fumes and hot liquid. Care must also be exercised in filling buckets, carrying and pouring so as not to splash the "hot dope" as it will burn through clothing.



The pipe is neatly racked after being cleaned and pointed following its removal from service. Good housekeeping not only adds to the appearance of properties but also contributes to safe operations.

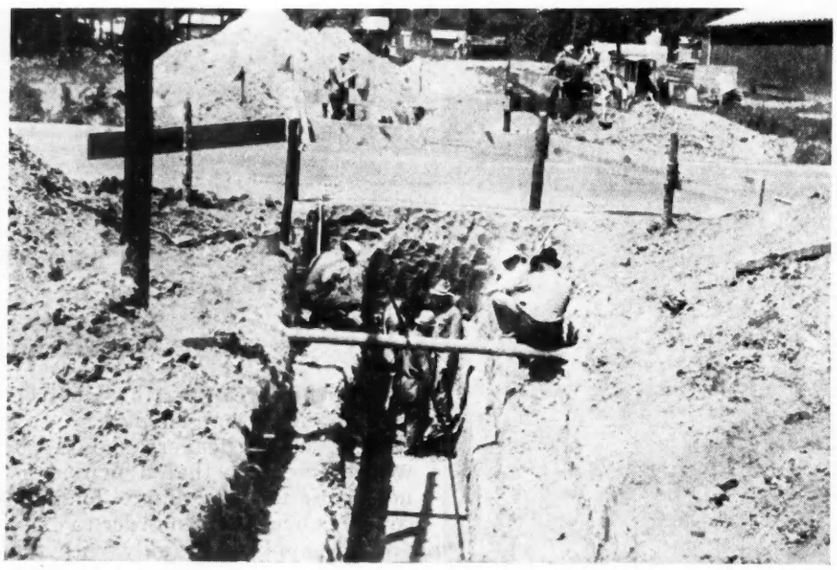
there is in every man's nature a desire to amount to something. He wants to feel that he is more than a cog in a wheel, a link in a chain. In his makeup there is a spark of ambition and if that spark is kindled by intelligent and kindly leadership it fires the man on to greater effort. This kind of discipline makes punishment unnecessary. It is leadership—not drivership and it is the only kind of discipline that has a place in industry today.

Job Planning

Planning supplants confused, ineffectual effort and insures orderly procedure and definite results. Job planning takes into consideration these factors: man power, material, equipment, time and costs. By anticipating requirements in advance, the man power, material and equipment necessary for the job can be obtained so that the work can be completed within the time allotted. In this way unnecessary haste and confusion is eliminated and the work progresses step by step in an orderly manner. Not only are accident causes lessened but other items of avoidable expense are controlled.

No major project is undertaken without first developing plans, but oftentimes we fail to give the necessary thought and study to normal operations or routine jobs. Such jobs do not, of course, require the consideration that is given to a major construction project but every job, every piece of work, is important enough to justify forethought and planning. We can not escape the fact that planning lessens the possibility of failure.

The danger of "cave-ins" as well as the expense of shoring with timber is avoided by "shelving" the ditch as it is dug.



Care of Physical Property

Equipment failures, though infrequent, are usually of serious consequences. They result in loss of production, increased operating expense and accidents. It is sometimes the case that equipment fails because of some inherent defect or weakness created in its manufacture but more often such failures result from preventable causes.

Equipment failures generally can be avoided and physical property maintained in a safe operating condition by adherence to these six rules:

1. **The Right Kind** — Purchase the equipment or tool that is suitable for the job that you have to do. Boilers have exploded because they were operated at a pressure in excess of that for which they were built. Fittings, pipe, drips, tanks and other vessels oftentimes rupture because low pressure equipment is used on high pressure service. Derricks have been pulled in because too great a load was thrown on them suddenly. This type of failure can be prevented simply by knowing what demands are going to be made on the equipment and buying it of sufficient size and strength to safely carry the load.

2. **Proper Installation**—The second step in the process of controlling equipment failures is that

A powerful International TD-40 Diesel TracTracTor used for clearing land, digging slush pits, building roads, etc., in the Lisbon, Louisiana, field.

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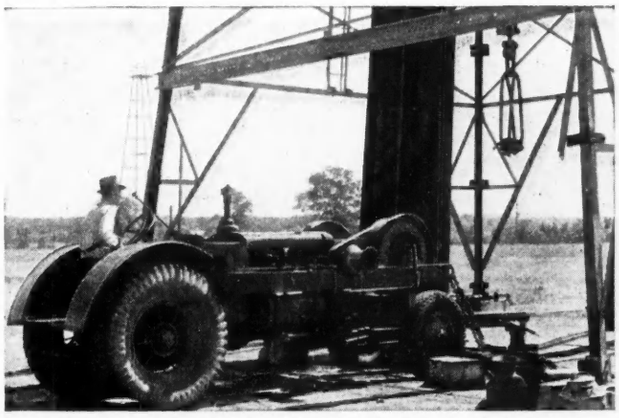

A modified International Industrial Wheel Tractor with tractor-operated winch built into it. This outfit has pulled sucker rods and put them back in the hole in 1½ to 2 hours, and has pulled tubing and put it back in 6½ to 7 hours. It travels from job to job at high speed.

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INTERNATIONAL Industrial Power

of installing it properly. Unusual wear, accidents and inefficient operations result from failure to do this.

3. **Mechanical Guarding** — The laxity in guarding the mechanical hazards around equipment seems to be the delay in getting such guards in place rather than improper or poorly designed guards. In the rush of getting the equipment in operation on time, compressor engines, drilling rigs and gas engines are started up before the guards are installed. This may result in the saving of time and again it may not. A serious accident would involve considerably more loss of time than the day or two that is saved by taking a chance with operating unguarded machinery.

4. **Frequent Inspection**—We are sometimes deceived by the equipment that operates uninterruptedly day in and day out without any outward signs of wear or defects. There is only one way to determine the condition of such equipment and that is by periodic, systematic inspections. Every piece of equipment whether it be a drilling rig, a compressor unit or a gas engine should be shut down and thoroughly inspected as often as is practical. This is done with cars and trucks and results obtained in improved transportation service, decreased operating expenses and fewer mechanical failures has proved the wisdom of the plan.

5. **Definite Schedule of Maintenance** — A definite schedule of maintenance would naturally follow if a plan of periodic and systematic inspections were carried out. Such a schedule of maintenance would provide for the replacement of equipment subject to unusual stress and strains induced by vibration, excess temperatures and high pressures.

6. **Good Housekeeping** — Good housekeeping is maintained through developing, in the employee, a sense of job pride and habits of cleanliness. Like training, the job is never finished. We must keep everlastingly at it.

The supervisor has several sources from which to draw in his efforts to put these four principals into operation. The two primary sources are the Safety Meetings and the Foremen's Meetings.

The Safety Meeting offers an excellent opportunity to bring the different crews and departments closer together and give them an understanding of each others problems. They afford also an excellent training medium. Because the meetings are so important from an organization standpoint every effort should be made to make them interesting and instructive. These suggestions may be of help in accomplishing this:

1. See that a program is planned for each meeting. It is an imposition to ask the employee to sit through an hour of aimless, listless discussion.

2. Get as many employees as possible to participate on the program. Do not let one or two individuals do all the talking.

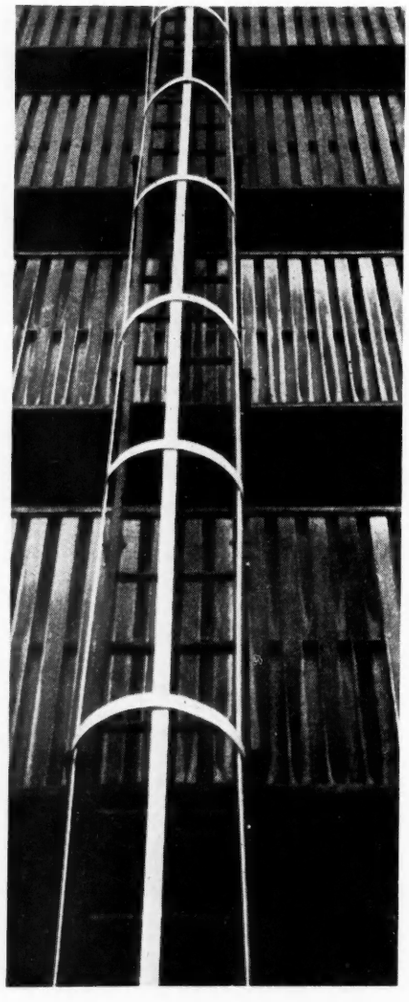
3. Do not make the meeting too formal. This stifles discussion and the meetings are pointless if they do not provoke discussions and suggestions.

4. Discuss work procedures and methods. Talk about every day problems, repairing leaks, welding, etc. We make the mistake of thinking everybody knows about these problems, but accidents indicate this is not true.

5. If attendance is so large as to prohibit free discussion then it may be advisable to break it down in smaller groups calling together only those interested in one line of work.

6. Hold meetings on scheduled dates unless some unavoidable emergency makes it necessary to postpone them. The employee comes to look upon the meeting as unimportant if it is postponed on the slightest pretext.

A "basket" guard is provided on this cooling tower ladder to protect the walker from falling should he lose his hold in climbing.



Foremen's meetings may be compared to directors meetings. They afford an opportunity for those in a supervisory capacity in the district to come together and discuss operating conditions, expenses and problems of personnel management. It is through the interchange of ideas at such meetings that foremen can better equip themselves for the responsibilities of leadership.

To insure that such meetings are worthwhile it is necessary that we give time and thought to planning them. The following suggestions may prove helpful in accomplishing this:

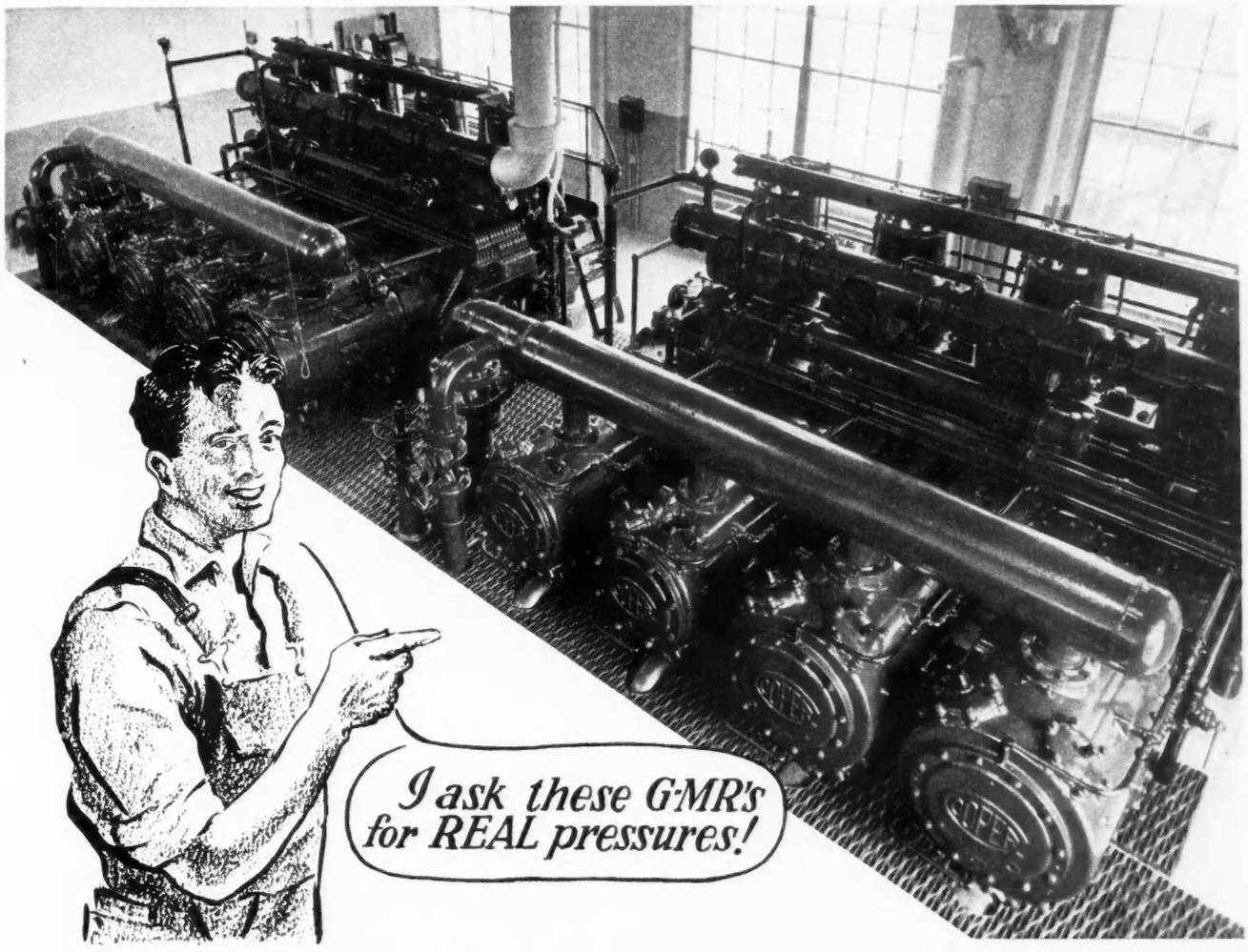
1. Have a planned program for each meeting. Draft a list of subjects suitable for discussion and appoint some member of the group to lead the discussion on each subject.

2. Discuss subjects relating to personnel problems, such as, selecting men, training, promotions and discipline.

3. Take up subjects that will provoke general discussions and bring each man into the program.

4. Rotate the chairmanship so as to give each foreman an opportunity to lead the meeting.

The problem of selecting the right kind of workmen, properly placing them on the job, training them as to correct job technique, planning the work and maintaining physical properties, is a big one, but very definitely a responsibility of the supervisor. By concentrating on these fundamentals, however, and definitely establishing them as a part of our operating procedure we can show further progress in improving service, preventing accidents and lowering operating expenses.



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105 YEARS OF KEEPING PACE WITH INDUSTRY

New Research Discoveries Point to Greater Recoveries

By FRANK B. TAYLOR
Staff Writer

THE action of flow, from reservoir to well bore, now is regarded as the one factor most important in obtaining the greatest ultimate recovery from either an entire field or a single well. The problem no longer is considered only an interesting mystery, as it was but a few years ago. The unseen processes of flow, powered as they are by the energy stored in the reservoir, are the subject of widespread experiment and study.

Through long and patient investigation, often against tradition and custom, new methods of production were tried, proven, and applied. Necessity of producing against an ever decreasing margin of profit, and proration, have been added incentives to more complete control of reservoir energies. A new era in the processes of production is being opened.

The greatest field of all time has responded to controlled production with an indication that it will yield to the operators the greatest percentage of recovery of reservoir oil yet known. East Texas is probably responsible, more than any other one factor, aside from the economic angles, for the awakening of interest in production research. Other areas in which production control has been applied, without even experimental guarantee of its effectiveness, have shown that time and effort expended in the search for better control of production processes should return handsome profits in barrels of oil. The incentive is here to uncover the secrets of bringing to the surface the greatest possible percentage of crudes so tenaciously held in the myriad pore spaces of reservoir rocks.

Connate Water Factor

As the greater portion of oil is found in sand reservoirs, the forces tending to retain oil in contact with siliceous material are a subject of particular investigation. Recently, too, it has been established conclusively that oil is not the only liquid occupying these sand spaces —water also is invariably found, the quantity varying through the range of 1 to 100 percent of the sand pore space. This determining of the presence of connate water in all oil sands has also justified a revision upward of the efficiency of recovery in older fields. This is because pore volumes underground, which have served as the basis of estimating crude content of a reservoir, have been charged with retained oil for all volumes not accounted for by recovered oil and gas. And this charge now is known to have been wrong, as varying percentages of pore space assumed to have contained oil did and still do contain connate water.

The forces of adhesion between the siliceous grain and the water film adsorbed on its surface and held at the point of contact by adhesive, interfacial, and surface tension forces, the distribution and retention of oil contacting the water or sand grain surface—these are all the subject of intensive study both in oil company maintained laboratories and in technical school laboratories.

Interesting Tests

Laboratory equipment is in use capable of measuring inter-facial and surface tension forces, acting at the inter-face of reservoir water and oil, under pressures up to 5000 pounds and throughout the full range of encountered reservoir temperatures. Such tests are being made using actual reservoir fluid, water, oil and gas, previously captured at the bottom of a well. The entire test is made, and all determinates indicated with the

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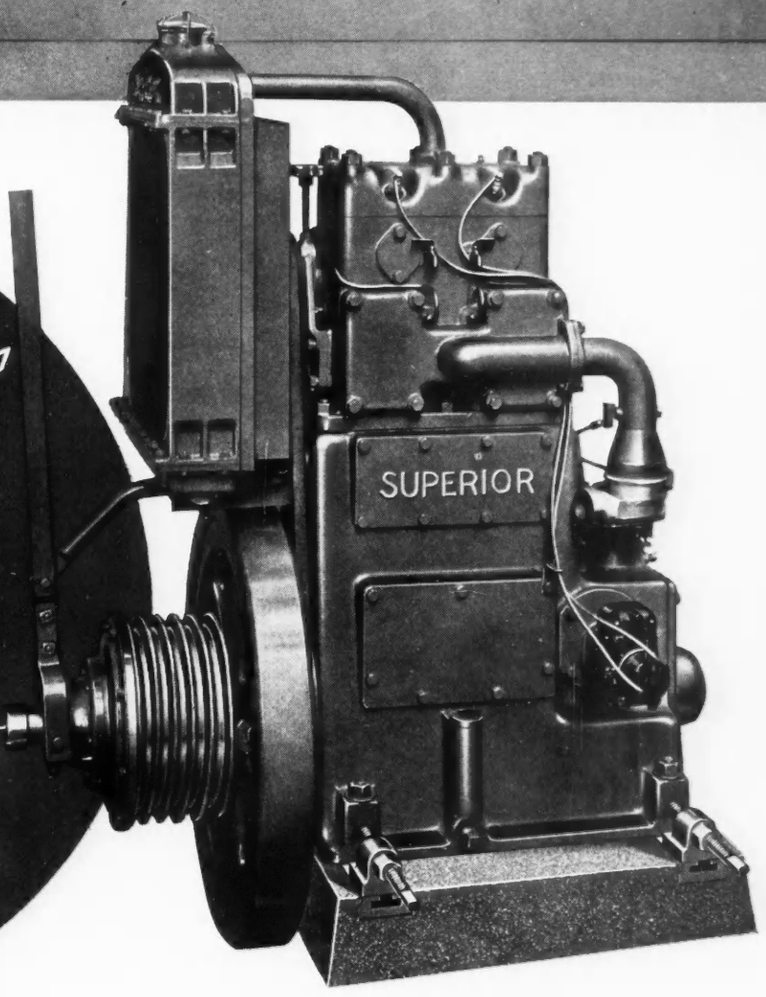

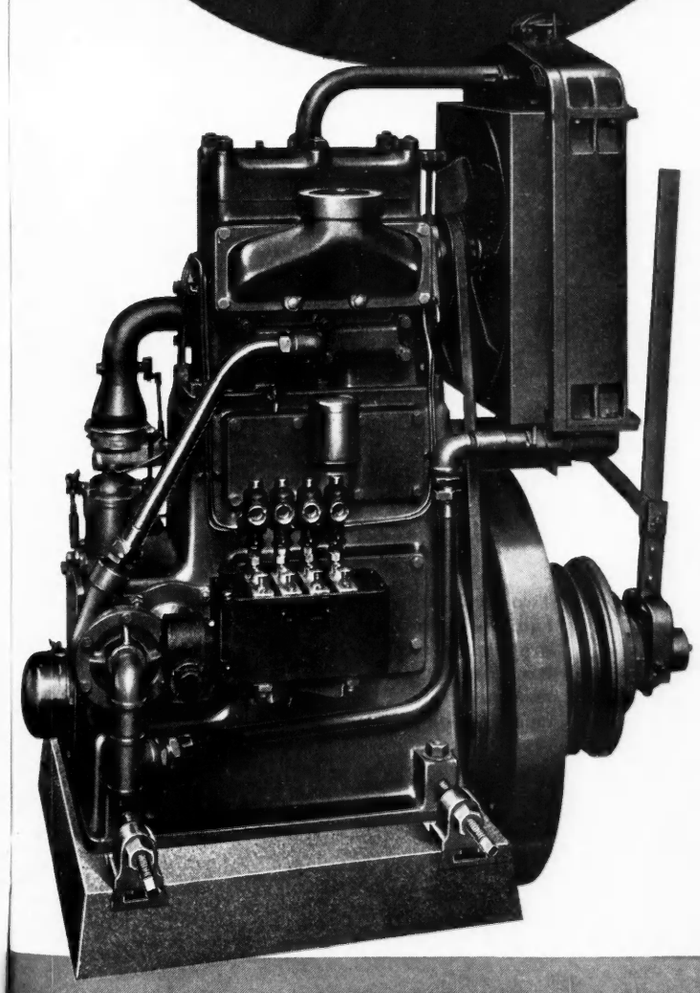

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liquid in closed pressure equipment, never being exposed to light or atmospheric pressure until it has yielded all the information the research engineer finds it possible to obtain.

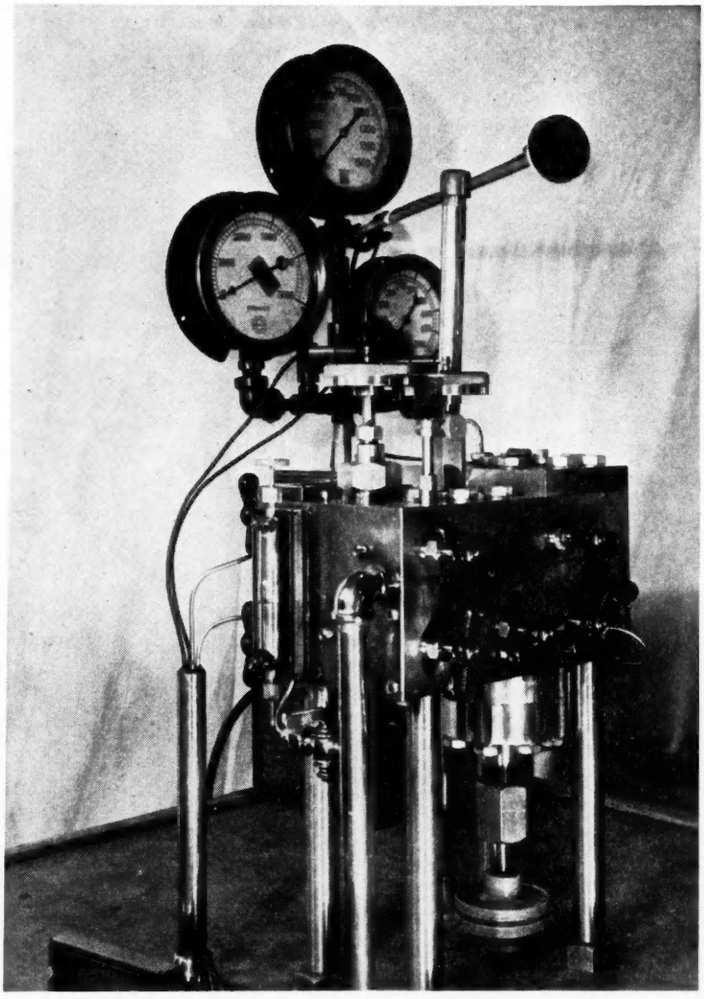
This particular method of test, dealing with no synthetic compounds, eliminates any question about the actual performance of the reservoir liquids at all temperature and pressure conditions. The same apparatus also measures the density and viscosity of the oil-gas fluid at any stage of the procedure.

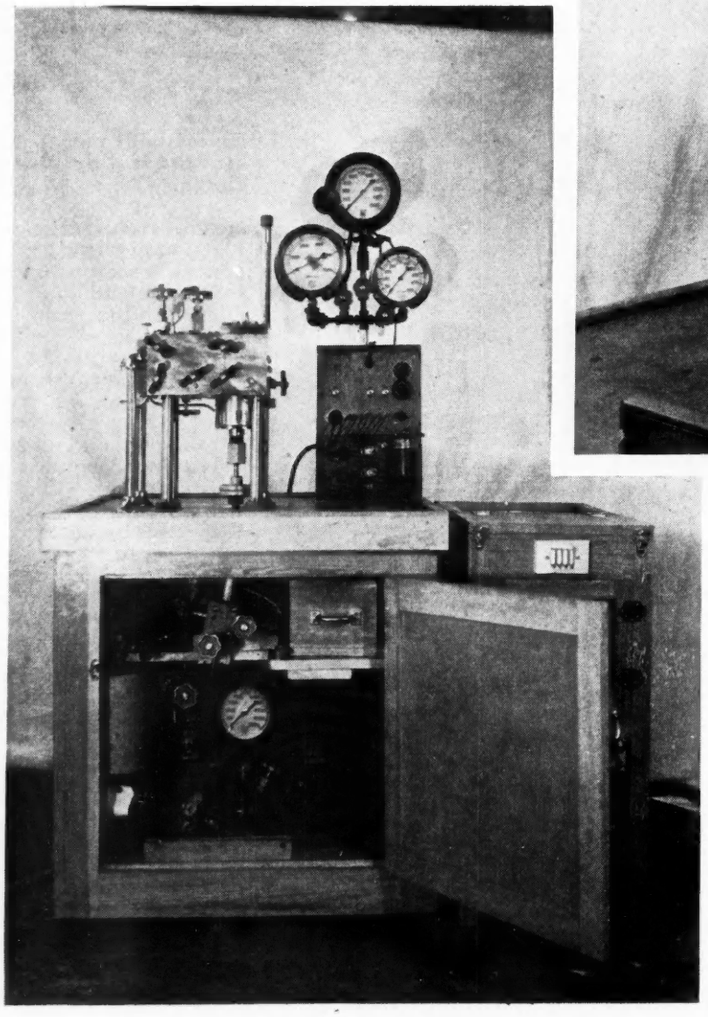
Flow Importance

Why all this trouble to measure these forces? Because it is only through thorough understanding of the physical laws governing the retention of oil by the sand that can come about the development of the most efficient way to release the oil, and the nearest approach to 100 percent recovery.

Even at this time no one is prepared to prove which is the more efficient method of producing oil —to allow the natural or supplemental water drive to flush the oil from the sand grains to the bore hole through raising of the water table by the process of depletion, or to inject gas for maintaining reservoir pressures and furnish the energy to drive the oil in its most liquid state to the well while the natural water drive is held from advancing. Also, one method ideally suited to one field might be wholly unsuited to another.

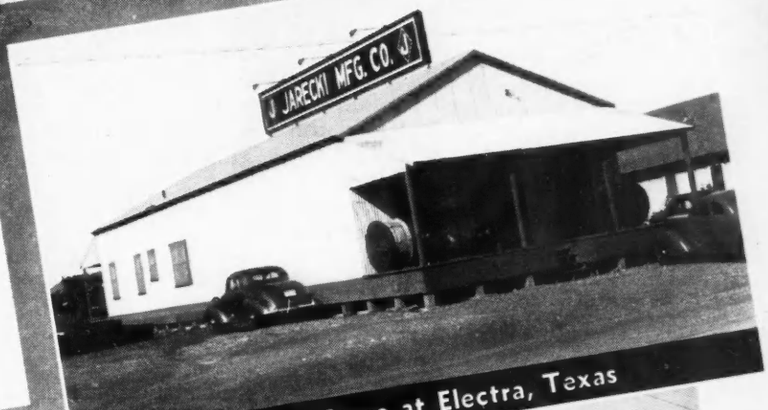
In the first case, the advancing



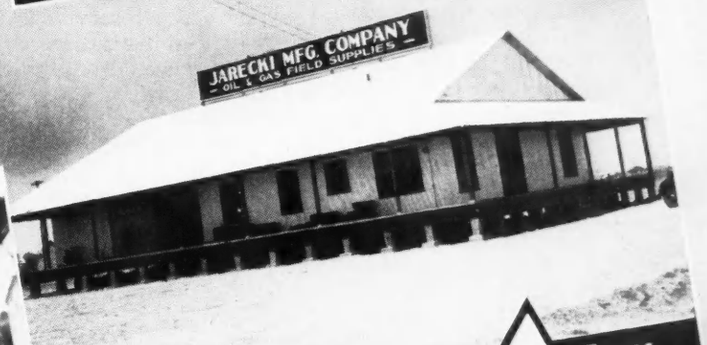


Two views of a modern piece of laboratory equipment developed to solve some of the problems constantly confronting the petroleum industry. The apparatus shown determines inter-facial and surface tension characteristics, viscosity and gravity of oil samples up to pressures of 5000 pounds per square inch.

4 MORE JARECKI STORES

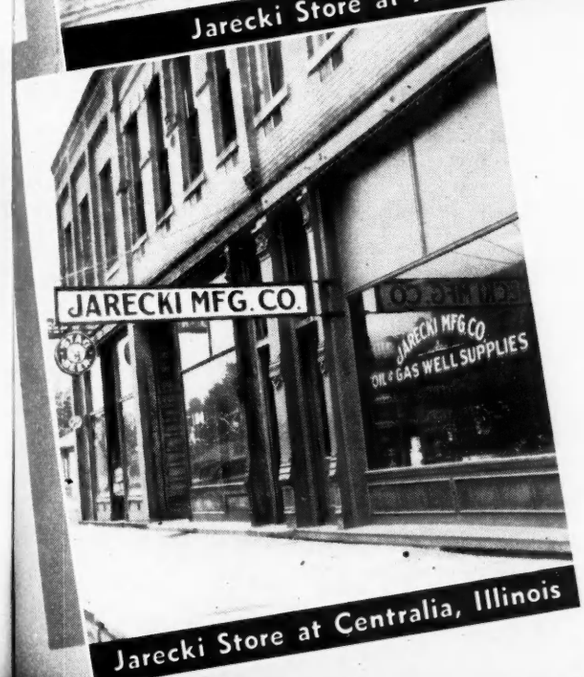


Jarecki Store at Electra, Texas



Jarecki Store at Seagraves, Texas

Jarecki Store at Allegan, Michigan



Jarecki Store at Centralia, Illinois

Within recent months Jarecki has opened four more oil country stores—at Electra, Texas; Seagraves, Texas; Allegan, Michigan; and Centralia, Illinois.

THE ELECTRA STORE is operated by Jack Cargile, formerly with Jarecki at Seminole, Oklahoma, and Turnertown, Texas; John Chism and Paul Carpenter, formerly at the Rodessa, Louisiana, store; and Burt Spalding, formerly at the Abilene, Texas, store.

THE SEAGRAVES STORE is operated by Glenn Smart and L. F. Cowan, both formerly at the Odessa, Texas, store; and Dale Fuller, formerly at the Jal, New Mexico, store.

THE ALLEGAN STORE is operated by L. R. Blosser, formerly associated with Jarecki at Muskegon, Michigan, and Gladwin, Michigan.

THE CENTRALIA STORE is operated by Frank Flick and J. C. Brown, of Centralia, Illinois; and Hoyt Langford, formerly at the Eldorado, Kansas, store.

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water displaces all possible oil and fills the evacuated space, effectively eliminating, some engineers hold, any chance for further separation of the oil from the sand grains. With the gas repressuring or pressure maintenance, some engineers believe the oil left clinging to the sand grains in the original or induced gas cap area has a less restricted opportunity to join the moving oil body on its flow into the well-radius of production. Experimental and analytical work is expected soon, to point to the most efficient application of the two means of recovery.

Formerly it was believed that the most oil could be produced by drilling the greatest number of wells over the least possible space of time, and producing each well to capacity. A new school, with thought contrasting this idea, is constantly gaining new adherents. It holds that the number of wells is of least importance; that open production drastically limits ultimate recovery, and that planned spacing, uniform withdrawal, and reservoir pressure control are the important factors in efficient drainage.

An increasing majority of engineers believe that gas in solution in reservoir oil should not be permitted to escape until the oil has entered the tubing leading to the surface. The claim is that the liberated gas has no more expansive energy than is required to overcome the additional resistance to flow created through the formation of millions of gas bubbles clinging to, and blocking the pores of the sand body. Loss of fluidity of reservoir oil by reduction of viscosity through liberation of gas in solution is an additional recovery impediment imposed by the lowering of reservoir pressure. To prevent this it is essential that the gas be kept in solution in the reservoir oil. Production research laboratories are investigating every phase of liquid flow through porous media in seeking more efficient oil recovery methods. An outstanding Eastern research laboratory has recently made available, through publication, the results of several years of scientific study of these problems.

With the recent trend to deeper drilling and the resulting discovery of a number of producing zones below 7000 feet, engineers have found themselves facing new problems, not the least of which is the high pressure encountered at the new depths. With production at higher pressures has also come about more general recognition that a gas reservoir may contain distillate or high gravity oil in a vapor or gaseous state, which gaseous distillate condenses upon the lowering of reservoir pressures past a critical point. In other words, instead of becoming more gaseous with lowered pressure as might reasonably be expected, part of the vapor enters the liquid state. This is retrograde condensation, a subject for much present investigation, for there is little doubt but that control of this new force will have much to do with high recovery from deeper structures.

Retrograde Condensation

A number of engineers who have studied the problem of production from high pressure distillate wells believe that much high gravity crude will be left unrecovered on the reservoir sand grains through condensation as the reservoir pressure drops with production. In light of new knowledge of the action of high pressure distillates, this theory is quite tenable. The one way to avoid this loss, it has been asserted, is to maintain the original pressures supporting the reservoir equilibrium. This could be accomplished by removing the gaseous contents of this type of reservoir, by extracting the distillate or heavier hydrocarbons, and by returning the stripped gas to the top of the structural accumulation as long as the operation was profitable.

Elaborate equipment has been developed in the research laboratory to study retrograde condensation and its effects. A sample of reservoir oil and saturated reservoir gas may be put in the same pressure bomb at atmospheric pressure. When the pressure is increased by pumping mercury into the same container, liquid is condensed out of the gas and the liquid mass increases with increasing pressure. To this point the action of the sample tested follows recognized laws of basic physics. However, the retrograde phenomenon of condensation soon becomes apparent. When the pressure reaches a critical point the liquid mass begins to decrease, and certain portions of the previously condensed liquid re-enter the gas above it. This decreasing of the fluid mass continues until at an extremely high pressure, say of 5000 pounds or more, the liquid and gas have about the same density and there is little or no actual fluid left in the testing vessel.

Laboratory experiment has not been carried far enough along this line to allow definite conclusions to be drawn. However, there are some interesting assumptions allowable.

The producing of condensate by the application of pressure is an action first producing liquid from the heaviest ends contained in the sample. As the pressure increases the next heaviest hydro-carbons enter the liquid phase, consecutively, until only the extremely light gases remain vaporous at the high pressures. It is this process, apparently, which is reversed in retrograde condensation. It is reasonable to assume from this that the point at which a hydro-carbon liquid is driven into the gaseous state by pressure is variable rather than critical, and is dependent upon the constituents of the sample. With increasing pressure of a magnitude sufficient to produce retrograde condensation, two actions probably occur. When the density of the gas over the liquid is increased past the point at which the liquid existed, then the liquid assumes the density of the gas, and enters into that state. At the same time, the increased density produces a disruptive molecular activity that further induces the liquid to enter the gaseous state. Assuming other liquid hydrocarbons to remain, they would vaporize, fractionally, as the pressure increased.

Just how far down the series of hydrocarbon compounds this action can be carried is problematical. Experimental work to define the exact critical pressures at which the various compounds re-enter the gaseous state would be an important key to the question. The answers to the many questions brought up by retrograde condensation are for the near future.

Doubtless there always will be in oil production, as in other industries, a wide difference of opinion. Whatever these differences are, in drilling equipment, drilling methods, drilling muds, well spacing, pressure maintenance, water or gas drive recovery methods or restriction of production—the oil industry engineers, physicists and chemists have a problem ahead equal to that of any industry in leading the way to the most efficient recovery and utilization of the natural resource most necessary for the industrial health, pleasure, and safety of the nation.

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Technological Aspects of Water Flood Curtailment

Bradford district research study indicates no appreciable quantity of oil need be lost because of the restriction of production from properties under water flood. Other interesting and valuable data also were procured, and are the subject of a series of articles, of which this is the first installment. In this chapter the various means of curtailing wells are discussed. Case history studies of particular properties will be presented in other parts of the series, along with analyses of important data and conclusions.

By S. T. YUSTER, Associate Professor of Petroleum and Natural Gas Engineering, Water Flooding Research Laboratory, Mineral Industries Experiment Station, The Pennsylvania State College.

VARIOUS parts of the Bradford area have been under curtailment at one time or another, either because of an economic situation, as at present, or because of failure of parts of the physical operating equipment. It is the purpose of this report to discuss the results of an anlysis of such curtailment data obtained from the water flooding producers, in the light of the technological aspects of the problem.

Six Curtailment Methods

Before proceeding with a study of the actual cases analyzed, it is of interest to examine from a theoretical standpoint the various possible means of reducing the rate of oil production from a property. Essentially, any curtailment program involves a decrease in the fluid throughput on a property. The various methods of accomplishing this purpose are as follows:

1. A complete stoppage of inputs and pumping.
2. Closing valves on input wells but pumping off all production.
3. Closing valves on input wells and only pumping off the water.
4. Maintenance of pressure on input wells and allowing a back pressure of oil to build up in the producing wells by pumping off only the water and the allowable oil.
5. Reduction of pressure on input wells to such an extent as to remain within allowable when the producers are pumped.
6. Reduction of pressures on input wells, allowing a back pressure of oil to build up in the producers, and pumping off only the water and allowable oil.

Calculations

The last three methods involve a reduction in the effective driving pressure gradients, which means a decrease in the fluid input. It is possible to calculate

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the extent of this reduction in input and therefore the curtailment in production.
Let

P_1 and P_2 be the pressures at the top of the input wells before and after curtailment, respectively.
h_s = distance from surface to the sand face.
h_o = average height of oil column above the sand face in the producing wells.

Since one foot of water exerts a pressure of 0.433 pounds per foot, the hydrostatic head of water in the input well will be 0.433 h_s. This must be added to the pressure at the top of the input well to give the pressure on the sand face. Therefore

(1) $P_1 + .433\ h_s$ = original applied pressure on the sand face in the input wells.

(2) $P_2 + .433\ h_s$ = applied pressure on sand face in input wells during curtailment.

If it is assumed that the oil being produced has a specific gravity of 0.8 (that is: it is 0.8 as heavy as water), the back pressure being applied on the face of the sand in the producers due to a column of oil will be

(3) $.433 \times 0.8\ h_o = .346\ h_o$

Since no appreciable back pressure is applied during a normal production period, the effective driving pressure is expressed by equation (1). During curtailment, when a back pressure of oil is carried on the sand face of the producing well, the effective driving pressure is the difference between pressures on the input and producers or equation (2) minus (3).

(4) $P_2 + .433\ h_s - .346\ h_o$ = Effective Driving Pressure.

It can be shown experimentally that the rate of fluid flow through a porous medium is directly proportional to the applied pressure difference across the ends of such a conductor. This same relationship may be assumed to be correct in the case of practical water flooding with no appreciable error. Therefore, the ratio of the effective driving pressures during and before curtailment should give the fractional part of the original production which is being produced during curtailment. If this ratio is designated by the letter F, the equation is

$$(5)\quad F = \frac{P_2 + .433\ h_s - .346\ h_o}{P_1 + .433\ h_s}$$

If no back pressure is allowed to build up in the producers and the curtailment program involves simply a decrease in the input pressure, then h_o becomes zero and equation (5) becomes

$$(6)\quad F = \frac{P_2 + .433\ h_s}{P_1 + .433\ h_s}$$

If the input pressure is kept constant and the effective driving pressure is reduced by a back pressure of oil then $P_2 = P_1$ and equation (5) becomes

$$(7)\quad F = \frac{P_1 + .433\ h_s - .346\ h_o}{P_1 + .433\ h_s} = 1 - \frac{.346\ h_o}{P_1 + .433\ h_s}$$

Equations (5), (6), and (7) apply respectively, to curtailment methods 6, 5 and 4.

If the rate of oil production just before curtailment is Q, then FQ will be the rate of production under the new conditions. It must be kept in mind that the equations just derived will hold over only a short period of time just as Q_1 the normal rate of production is not constant and follows a general production curve. Therefore, the pressures will have to be varied to keep the rate of production within the allowable. If the production curve is on the upswing, the effective driving pressure must be decreased by one of the methods already described. If, on the other hand, the rate of production is on the decline, the driving pressure will have to be increased slowly to keep up with the allowable production.

If one assumes that the rate of oil production is fairly constant, (on a flat portion of the production curve) it is possible to calculate the pressures necessary to give the allowable oil under curtailment method 6. Solving equation (5) for the effective driving pressure gives

(8) $P_2 - .346\ h_o = F\ (P_1 + .433\ h_s) - .433\ h_s$

Since all the quantities on the right hand side of the equation are known, $P_2 - .346\ h_o$ can be determined. P_2, the new pressure on the input well and h_o, the height of the column of oil in the producer, are both variables and therefore may be changed in such a manner as to be equal to the right hand side of the equation, which is a constant. If P_2 is increased then h_o must also be increased, or, to put it in different language, if the pressure at the input well is kept high, there must be a corresponding increase in the height of the oil column standing in the producing well.

Similarly, solving equation (6) for P_2 will give the pressure necessary at the top of the input well for curtailment by method 5.

(9) $P_2 = F\ (P_1 + .433\ h_s) - .433\ h_s$

If curtailment method 4 is used, solving equation (7)

(10) $h_o = 2.89\ (1 - F)\ (P_1 + .433 h_s)$

This gives the height to which the oil can stand in the well and still maintain the allowable when the pressure on the inputs is kept constant.

In order to clarify the application of these equations it would be of interest to solve several possible problems.

Let F, the fractional portion of the original oil production which is the present allowable = 0.75.
P_1, the original input pressure = 800 lbs./sq. in.
h_s, the sand depth = 1800 ft.

If the method of curtailment is to reduce the input pressures, and allow a back pressure of oil to build up in the producing well, substituting the above quantities in equation (8) will give the conditions necessary for such a procedure.

(11) $P_2 - .346\ h_o = .75\ (800 + .433 \times 1800) - .433 \times 1800$
$P_2 - .346\ h_o = 405$ lbs./sq. in.

If the pressure on the input wells is dropped from 800 to 600 lbs./sq. in. then P_2 is 600. Substituting 600 in equation (11)

(12) $h_o = 564$

This is the height at which the oil must stand in order to satisfy the conditions which were specified.

If the method of curtailment is to change the input pressure and still pump off the producers, then equation (9) may be applied to the data.

(13) $P_2 = .75\ (800 + .433 \times 1800) - .433 \times 1800$
$P_2 = 405$ lbs./sq. in.

The input pressures would have to be cut from 800 to 405 lbs./sq. in., a 50 percent cut, in order to reduce the production by 25 percent (1—.75).

If the method of reducing production is to allow a back pressure of oil to build up in the producers

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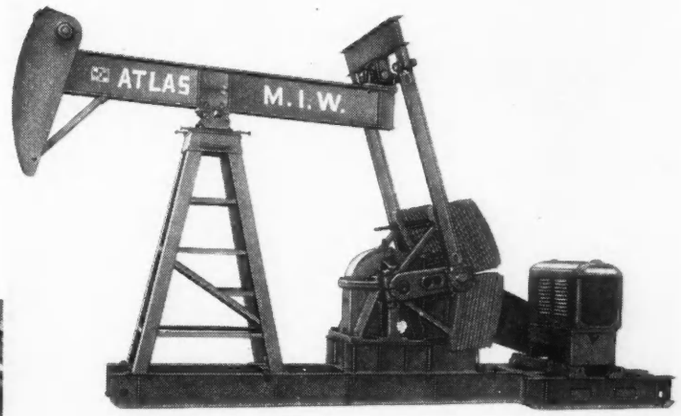

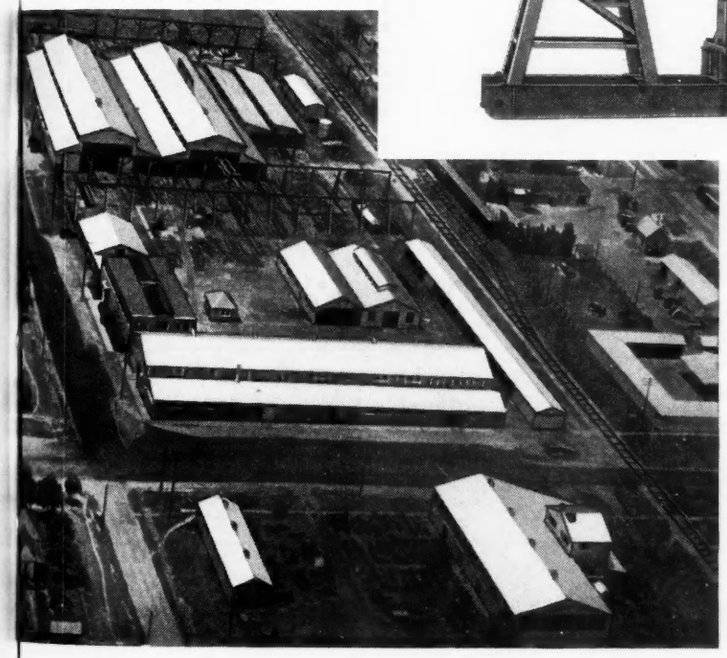

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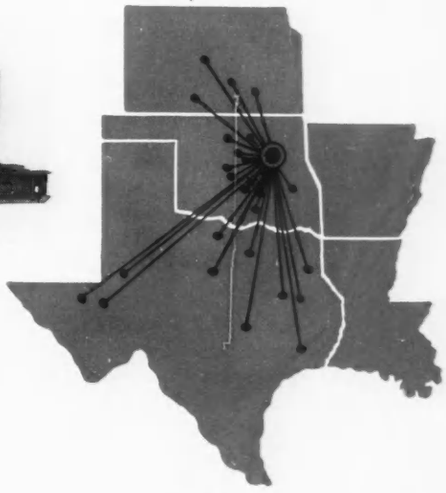

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while keeping the input pressures constant, then the data should be substituted in equation (10).

(14) $h_o = 2.89\,(1 - .75)\,(800 + .433 \times 1800)$
$h_o = 1143$ ft.

This is the height to which the oil will stand in the producers if the conditions given are to be satisfied.

A producer may desire to flow his wells during the curtailment period and under such a condition would like to know the production to expect. The ratio of the productions before and after applying such conditions is equal to the ratio of the effective driving pressures in the two cases. Multiplying the original production, Q_1, by the ratio of the pressures will give the new rate of production, Q_2. The ratio of the effective driving pressures is given by the equations defining F. Multiplying Q_1 by F will give Q_2. The most generalized equation for F is equation (5). If it is assumed that the distance from the top of the well to the sand is the same in both the inputs and producers, then h_o will be equal to h_s since the oil is to be flowed. There is one other assumption involved in the calculation, namely, that there will be no accumulation of water in the producing well to produce an appreciable water head. The general equation will then be:

$$(15)\quad Q_2 = Q_1 \frac{P_2 + .433\,h_s - .346\,h_s}{P_1 + .433\,h_s}$$

Let $Q_1 = 500$ bbls./day
$h_s = 1800$ feet
$P_2 = 1000$ lbs./sq. in.
$P_1 = 800$ lbs./sq. in.
Then
$Q_2 = .733\,Q_1 = .733 \times 500$
$Q_2 = 366$ bbls./day.

By such a method of curtailment the production would be cut to about three-fourths of the original, with a simultaneous reduction in the pumping costs since the wells are flowing. By substituting the proper quantities in the above equation, it is also possible to calculate the input pressures necessary to produce at a given rate. There are other factors involved in such a method; these will be discussed later in this report.

One of the possible sources of oil loss during a curtailment period is in a sand which has practically no oil saturation and which is unpacked in the producing wells. If a head of oil is allowed to build up above such a sand, the fluid will penetrate the formation both by capillary action and by the pressure of the column of oil above it. The penetration will be a function of the permeability and liquid (oil or water) content of the sand. Such a thief sand if unpacked in the producers, will eliminate the possibility of curtailing with a back pressure of oil above the position of that sand in the well. For the purpose of calculating the pressures necessary at the input well in order to maintain a given allowable and at the same time to keep the head of oil in the producers at such a level as to eliminate losses in the thief sand, let h_o be the height of the thief sand, above the producing formation. By solving equation (5) for P_2, it is possible to obtain the new pressure on the inputs.

$$(16)\quad P_2 = F\,(P_1 + .433\,h_s) + .346\,h_o - .433\,h_s$$

Since all the quantities on the right hand side of of the equation are known, P_2 may be solved for directly.

If $F = .75$ (75 percent curtailment)
$P_1 = 800$ lbs./sq. in.
$h_s = 1800$ ft.
$h_o = 200$ ft.

(17) $P_2 = 474$ lbs./sq. in.

which is the pressure necessary at the input wells to cause the production to remain within the allowable and to eliminate the possibility of loss in a thief sand due to a back pressure of oil in the producer.

Similarly it is possible to calculate the rate at which oil must be produced under the conditions just discussed.

$$(18)\quad Q_2 = Q_1 \frac{P_2 + .433\,h_s - .346\,h_o}{P_1 + .433\,h_s}$$
$$= 500 \frac{474 + .433 \times 1800 - .346 \times 200}{800 + .433 \times 1800}$$
$$= 375 \text{ bbls./day.}$$

It would have been much easier to multiply the allowable factor .75 by the production (500 bbls./day) to obtain the 375 bbls./day, but equation (18) is generalized and can be used with any quantities.

It must be kept in mind that all the equations considered so far in this report are idealized and hold only over parts of the production curve, which are fairly flat. If the rate of production is increasing, then the effective driving pressures must be decreased by one of the listed methods to remain within the allowable and if the production curve is on the decline the effective driving pressures must be increased gradually to compensate for the normal decline rate. Despite the fact that such calculations may involve approximations of the actual conditions, they are still the most accurate approach to the problem.

Up to this point we have been considering the various methods of curtailment and some of the mathematical equations related to these methods. It is also necessary to include in the discussion the effect these methods have upon the arrangement of the oil, gas, and water in the sand and the bearing these factors have upon the ultimate recovery. The methods will be considered in the order in which they are listed in the first part of the report.

Method 1

Curtailment Program Consisting of Complete Shutdown of All Inputs and Producers

If this method is applied during the early part of the life of a flood before oil has broken into the producing wells, no appreciable back pressure of oil can build up. The column of water, which is left in the input well gradually penetrates the formation until the head remaining is equal to the formation pressure. The gas which has been forced into solution by the applied water pressure is liberated from the oil when this pressure is released. This will result

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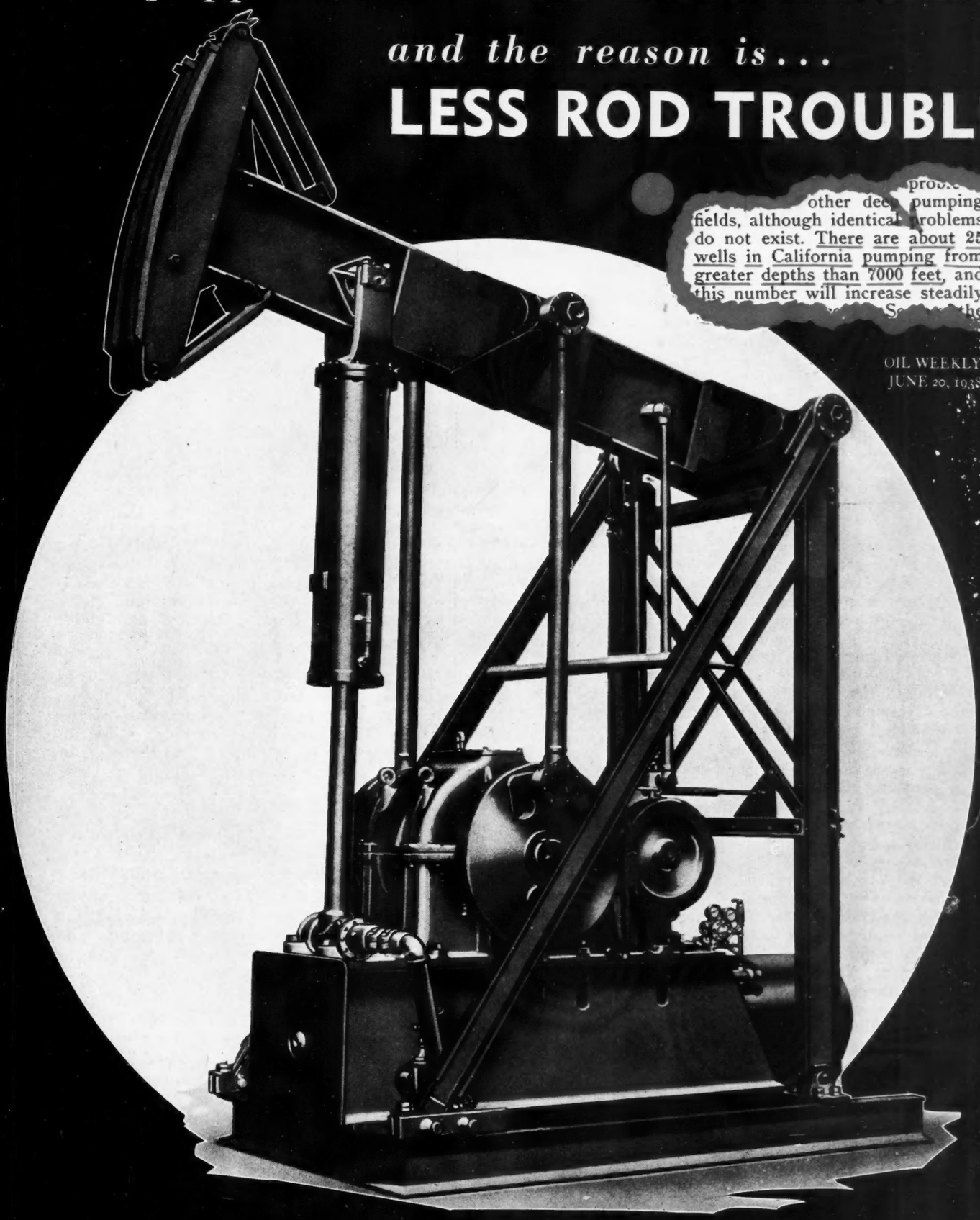

...prob... other dee... pumping fields, although identical problems do not exist. There are about 25 wells in California pumping from greater depths than 7000 feet, and this number will increase steadily S... the...

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in a movement of oil away from the flood front by the same mechanism in operation during natural production. Since the flood is in the early stages practically none of this oil will penetrate to the well but will distribute itself in the sand. The energy which has been injected into the oil by the gas going into solution has been dissipated because of the release of pressure. When pressure is reapplied, the flood front will build up a bank of oil just as originally and the gas will go back into solution.

The question then arises as to whether such a shutdown will decrease the ultimate economic recovery of oil and reduce the rate of recovery to such an extent as to increase the cost of removal. A critical examination of the possible factors, which might contribute to types of behavior just mentioned may aid in clarifying the problem.

The oil man has often discussed the possibilities of the fluids in the sand undergoing a rearrangement during a shutdown period. It is supposed that the oil, water and gas shift around in such a manner as to cause the oil to migrate into the relatively inaccessible capillaries in the sand. If such a behavior is postulated, there also must be a mechanism to explain the phenomenon. In the microscopic study of the flooding process in single fused quartz capillaries, no appreciable rearrangement was noted even when the oil was allowed to remain in contact with the water for as long as seven months. On the other hand, when studying this same phenomenon in pyrex glass capillaries, a rearrangement was observed in which the water appeared to migrate along the capillary walls and separated the oil column beyond the flood front into tiny segments.

Quartz is preferentially wet by oil at an oil-water interface while pyrex is preferentially wet by water under the same conditions. This difference in behavior may explain the stability in one case and the rearrangement in the other. A possible reason for the shift in a glass capillary is that it contains certain water-soluble constituents and the water may have migrated along the wall by dissolving part of the glass and cutting the oil column up into segments. Although the percentage of soluble constituents may be extremely small, it is a sufficient quantity to account for the phenomenon.

If the explanation given for the rearrangement is the correct one, then the presence of water-soluble minerals in the oil sand capillaries would create the possibility of the same phenomenon taking place there. Such minerals as gypsum, feldspars, micas, calcite and dolomite in the presence of acid waters, and others will show the solubility properties mentioned. A counter-acting influence will be the deposition of a petroleum-like film on the surface of these minerals (evidence for such a film has been found in our research work) which will resist rupture and thus prevent any water from migrating along its surface. Another opposing tendency to this type of rearrangement is that the soluble type of mineral must either make up the complete oil reservoir or continuously line the capillaries. If the capillary is not completely lined with these minerals, the migration of the water will be stopped at the point where the capillary is constructed of an insoluble material.

If such a shift, as has been described, does take place, it is of importance to know what effect it may have upon subsequent production. The existence of alternate segments of immiscible fluids such as oil and water is a condition necessary for the establishment of Jamin action. Therefore, upon the reapplication of pressure to a type of sand as this, the rate of flow and therefore the rate of production will be decreased. That is, the flood will tend to start off slowly upon the reapplication of pressure. The magnitude of the effect would be determined by the minerals present, the duration of the shutdown, the sand structure, the type of oil and water, etc. In view of the conditions necessary, it is doubtful whether this phenomenon plays any great part in effecting any change in the production of a property.

There is another type of rearrangement which is possible in this type of shutdown. When the water pressure is turned off, a constantly decreasing head of water is being applied at the input well as the water in the tubing penetrates the sand. At the same time, the residual oil which is behind the flood front and which has some gas dissolved in it begins to liberate this gas because of the reduction in pressure. Both the small head of water and the pressure created by the liberation of gas from the residual oil tend to cause the flood front to penetrate under a low pressure gradient into an oil bank which is also liberating gas. These combined effects will result in a so-called fingering of the flood into the oil sand with a resulting by-passing action. The low pressures cause the flood to penetrate chiefly the larger capillaries and to by-pass the smaller ones. This would mean a reduction in yields in the parts of the sand so affected.

It is almost impossible to estimate the effect this would have on oil recoveries as there are so many variables involved. It is doubtful, however, that it causes an appreciable reduction in recoveries, as both the head of water in the inputs and expanding gases in the residual oil should expend themselves in a short time. This, coupled with the fact that the expanding liberated gas acts as an automatic choke valve by establishing Jamin action, would inhibit the effect.

Upon resuming operations after curtailment, it would be expected that the rate of production for a given effective driving pressure would be less than the rate preceding the shutdown because of the Jamin action. This rate should increase as the liberated gas goes into solution again and the slugs of oil present in columns of water migrate to cross channels.

The possibility of the recrystallization of soluble minerals in the flood waters during a shutdown period should be considered in this discussion. Any such action might cause the permeability of the sand to decrease if the crystallization took place in the major conducting channels. It would require that the minerals go into solution in one part of the sand and then migrate through the tiny capillaries and be redeposited in another part of the sand. The conditions necessary for this migration and deposition are that there must be a difference in the concentration of the mineral in solution between the two points, the movement being from the high to the low concentration, and that the solution must be supersaturated at the point of deposition. The great difficulty of satisfying the above conditions and the very slow rate of migration of soluble materials in tiny capillaries would almost completely eliminate this possibility of plugging. The inhibitory effect of an

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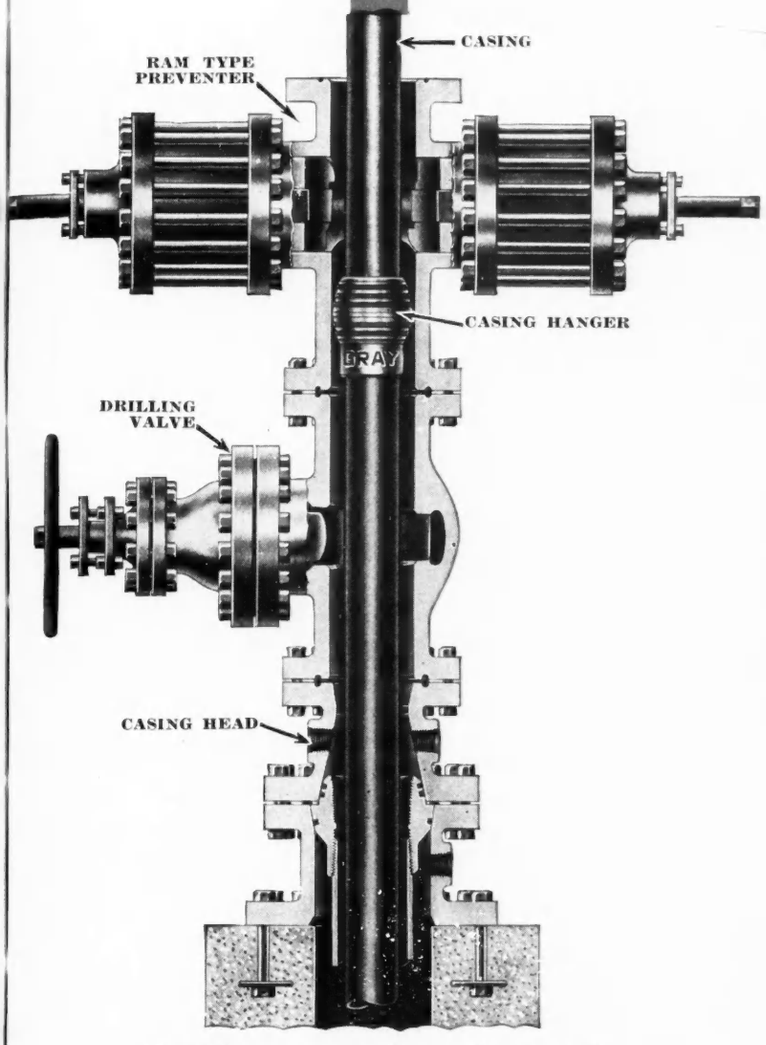

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adsorbed petroleum-like film on the rate of solution would further minimize the effect.

Micro-organisms are known to form in stagnant water and therefore a plugging action by these organisms is a possibility. For growth to take place, however, the proper conditions must be present and these are food and the necessary environment peculiar to the particular organism. It is doubtful whether such conditions exist either in the sand or at the bottom of the input well where some water remains and therefore the chances of a plugging action by micro-organisms during a shutdown is quite remote.

During some experiments which required oil and water to remain in contact with one another for prolonged periods of time, it was observed that a white scum-like film formed at the interface. Evidence for the formation of a similar film was found in a quartz capillary in which oil and water had remained in contact with one another for several months. This film seemed to offer some resistance to the penetration of water in the capillary. No visible evidence of film formation was detected when a synthetic oil field brine remained in contact with petroleum for a prolonged period of time. There is no definite knowledge of the nature of this film but it is probably the reaction product of the unsaturated and non-hydrocarbon constituents of petroleum with water. Since the water at the flood front contains brine which it has picked up during its travel through the sand, the action of any film in reducing the conductivity of the sand after a shutdown is probably negligible. Even if the formation of a film is admitted, its sphere of influence along the oil-water contact at the flood front would be limited and therefore of no great importance. Any possible film which may form between the residual oil and the surrounding water may have some effect as the oil which was in non-conducting channels (the flood failed to penetrate them) may be shifted to conducting channels by liberation of the gas due to release in pressure. This would slow down the rate of recovery when flooding is begun, again due to a magnified Jamin action.

If the oil has broken into the producing well in a water flood and the curtailment program requires a complete shutdown, consideration must be given to another phenomenon. Since the producing sand has a vertical variation in permeability, it would be expected that the oil would break through the various permeability strata at different times. Figure I shows diagrammatically what happens in this case.

The oil from the high permeability streak has broken into the producing well and has created a back pressure on both the high and low permeability sections. While the back pressure is not very great, as no water is being injected into the input wells it is still sufficient to force some oil into the low permeability section which has not broken into the producing well. This oil will be produced when the flood in the low permeability section penetrates in the producing well. In addition this oil will be most efficiently produced as it will be subject to some of the highest pressure gradients in the sand which come into play in the region surrounding the wells.

If water has come through the high permeability sand into the producing well and the property is shutdown completely a head of both water and oil will be produced with the water on the bottom because of its greater density and therefore covering the sand face. If liquid (either oil or water) has come through the low permeability section, it is doubtful whether the water will harm the formation since it cannot penetrate the sand when it is saturated with liquid.

On the other hand, there is the possibility that liquid has not come through all the strata in the producing formation into the well. In such a case the back pressure of liquid will cause water to penetrate into those formations which have not produced an appreciable quantity of liquid. This water will produce a Jamin action with both oil and gas, which are immiscible with water, and the rate of production from these formations will be decreased. Since this water which has penetrated must be produced again before oil breaks into the well, an excess of water will be produced in these stages. It is undesirable, therefore, to allow any head of water to build up in the producers because there is almost always the possibility that one of the lower permeability formations has not begun producing. The water will penetrate these strata and make it more difficult to remove the oil from them.

Summary of Discussion on Curtailment Method 1

Advantages:

1. No operating costs during curtailment, as shutdown is complete.

Disadvantages:

1. Some loss of energy due to liberation of gas from solution in the oil upon release of input pressures.

2. A decrease in rate of production after resumption of operations because of Jamin action of gas

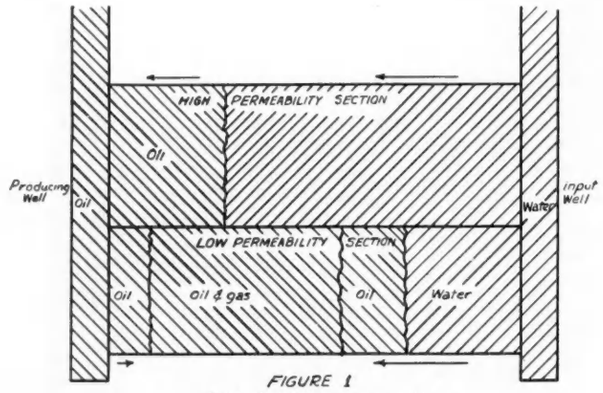

FIGURE 1
Effect of shut down on variable permeability horizons
Arrows show direction of fluid motion

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liberated. This rate will continue to be slow until the gas goes back into solution.

3. The possibility of a head of water building up on the sand face exists in this method of curtailing. Such water may penetrate lower permeability streaks which have not broken into the well, cause Jamin action, and slow down the rate of production.

Method 2

Curtailment Program Involving Closing the Valves On Input Wells and Pumping Off All Production

The discussion of this method involves almost the same factors as in Method 1. No back pressure will build up in the producing wells at any time and therefore there will be a greater loss of energy due to the liberation of dissolved gas. This will mean that the return to normal production will be deferred until the gas redissolves in the crude and therefore the production rate after resuming normal operations will be slow at first. In effect, then, the curtailment period will be longer than the shutdown time as the rate of production does not return to normal until the reservoir regains its lost energy.

Summary of Important Points Pertaining to Curtailment Method 2

Advantages:

1. Low operating costs during curtailment as input wells are shut down and producing wells are pumped off only often enough to keep liquid from accumulating.

2. No water can penetrate any of the strata in the producing well and make production from them more difficult.

Disadvantages:

1. Almost complete loss of energy due to liberation of gas from solution in the oil upon release of input pressures with no allowance for a back pressure upon the producers.

2. Decrease in rate of production after resumption of operations because of Jamin action of gas liberated. This rate will continue to be slow until the gas goes back into solution. Normal production is therefore deferred.

Method 3

Curtailment Program Consisting of Closing Input Wells and Only Pumping Off the Water in Producers

The method is similar to Methods 1 and 2 (in fact, it is a compromise between them) and includes the best points of both. A back pressure of oil builds up to some extent in the producing well and in this way helps to conserve the energy of the gas in solution. At the same time no water is allowed to accumulate in the well which would block off some of the producing sand. Although no new points have been discussed in this method, it will be summarized as a matter of record.

Summary of Important Points Pertaining to Curtailment Method 3

Advantages:

1. Low operating costs during curtailment as input wells are shut down and producing wells are pumped only to keep the water off the face of the sand.

2. No water can penetrate any of the strata in the producing well and make production from them more difficult as all the back pressure is due to a column of oil.

Disadvantages:

1. Some loss of energy due to liberation of gas from solution in the oil upon release of input pressures.

2. A decrease in the rate of oil production after resumption of operations because of Jamin action of gas liberated. This rate will continue to be slow until the gas goes back into solution.

Method 4

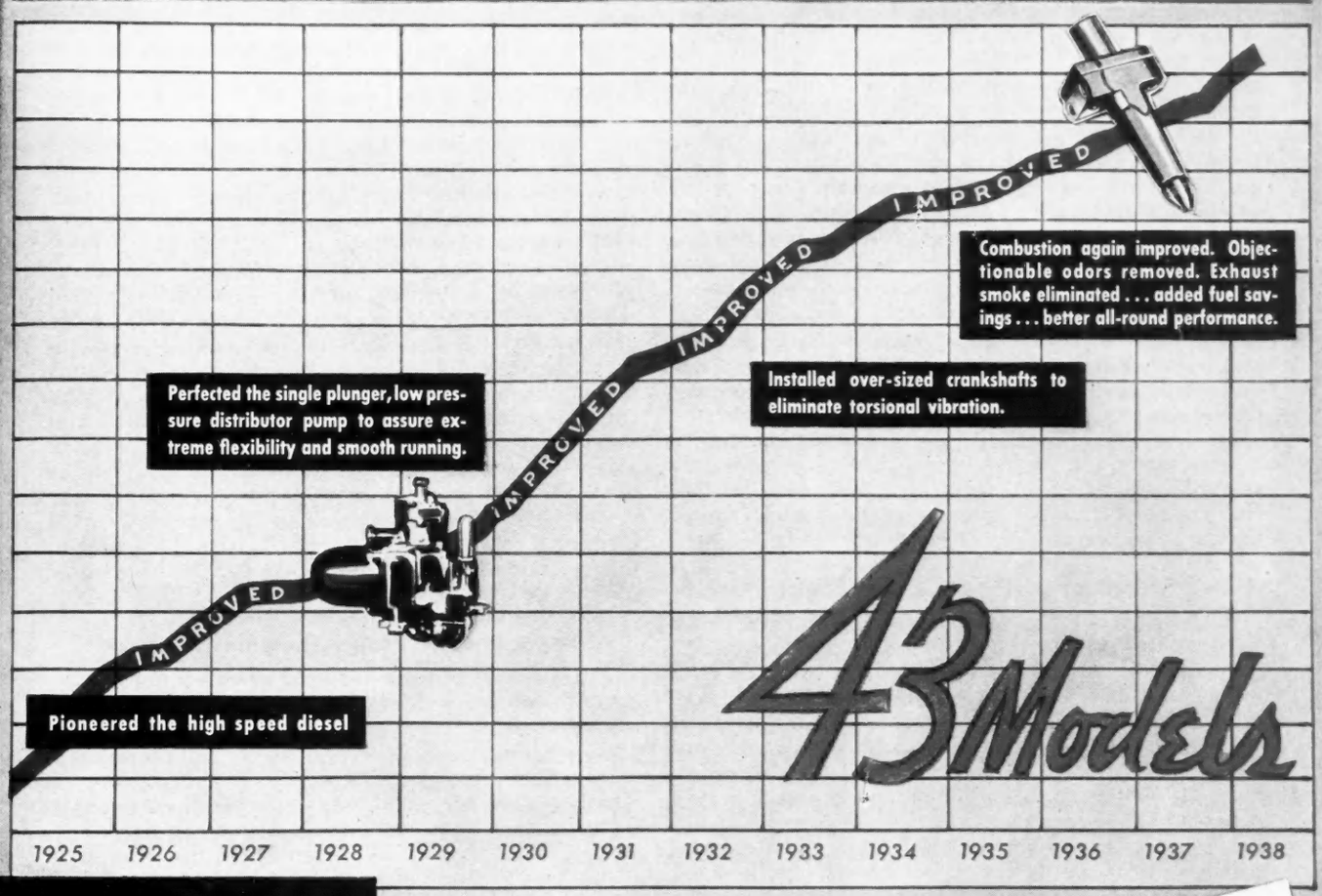
Curtailment Attained by Maintenance of Pressures on Input Wells and Allowing a Back Pressure of Oil to Build Up in the Producers by Pumping Off Only the Water and the Allowable Oil

During the regular intensive development of a water-flood property, the oil which has been saturated with gas in the higher pressure portions of the sand, begins to lose some of this gas as it approaches the producing well because of the lower pressures upon it. This results in a reduction in the rate of flow of the oil because of Jamin action. The extent of this self-choking action is dependent chiefly upon the pressures involved in flooding, the gas content of the formation, and the pore structure of the sand. If the gas could be kept in solution, no Jamin action would be established and the rate of flow of the oil would actually increase. In order to keep all the gas in solution, a pressure at least equal to the vapor pressure of the gas-petroleum complex must be maintained on the formation. The method of performing this is to allow a back pressure of liquid to build up in the producing well.

Effect of a Back Pressure

On the other hand, a back pressure on the producers means a lower effective drive pressure as the actual pressure difference between the input and producer sand face has been decreased. The application of a back pressure results in two opposing tendencies coming into play, namely, an increase in the rate of production due to a decrease in Jamin action and a decrease in the rate of production due to lower pressure gradients. It is to be expected, therefore,

No Recession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Cummins Improvement knows no recession. If we built a diesel engine to serve, creditably, only one or two industries, the "improvement curve" might have levelled off. But the use of the Cummins Diesel is as widespread and varied as industry itself . . . the power need of each industry has become a separate test block of its own.

Whatever your power need (industrial, automotive, or marine) remember this: The Cummins Diesel has been field-tested and field-approved, not only in the use to which you will put it, but in the widest variety of power applications ever given ANY diesel engine.

C. L. Cummins PRESIDENT
CUMMINS ENGINE COMPANY, COLUMBUS, INDIANA

that there will be some optimum back pressure which will give the maximum rate of production under the conditions present. It is almost impossible to predict in advance what this pressure will be because of the number of variables involved. Experimentation would determine the best pressure but it is felt that that is very close to the vapor pressure of the gas/oil solution complex.

From the foregoing discussion it would seem that a certain amount of back pressure is beneficial. There are other advantages which have not been mentioned because they do not have any direct bearing upon curtailment. Pressures beyond a certain point on the producing sand face do reduce the rates of recovery and therefore serve as a means of curtailing production. However, in applying this method several very important factors must be considered in order to operate most efficiently.

One very important point which must be kept in mind is that it is harmful to allow any appreciable head of water to build up on the sand face. The theoretical reasons for this have been discussed under the other curtailment methods and the set-up is similar to that shown in Figure 1. Water may penetrate strata which have not begun to show their production in the well and increase the difficulties of producing in the future.

Effect of Water and Oil on Shales

Water, in addition, has another harmful influence. In some experiments performed in the laboratory, some pieces of shale were placed in contact with ordinary tap water and some synthetic oil field brines. After a few hours the formerly solid pieces of shale were falling apart and in about twenty-four hours were broken into lamina. Such a condition in the well would cause excessive caving which would necessitate frequent clean out jobs. Since the shales are swelling and disintegrating, fines are produced which settle towards the bottom of the well where water may be penetrating certain of the strata. The fines will penetrate also and reduce the permeability. Once this has happened the sand would be harmed permanently and the production rate would remain low.

During the experiments just described, the effect of petroleum on shales was also tested. No disintegration whatsoever could be detected even after a month's contact. It may therefore be concluded that in allowing a back pressure to build up in the producing well, the oil will not harm the formations but all water must be pumped off.

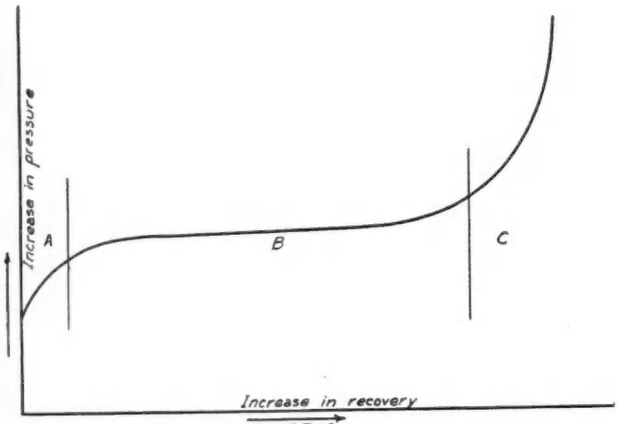

FIGURE 2
Relationship between pressure and recovery

Thief Sands

Although the oil can do no harm to the formation it is possible under certain conditions that certain formations may remove oil from the producing well if the liquid level is allowed to come up to or above them. This possibility was mentioned earlier in this report and equations were derived for operating under such conditions. These thief sands will remove oil from the well both by capillary action and by the drive of a head of liquid above them. This infiltration will continue until the pressure within the thief formation is equal to the head of oil on them. Once oil has penetrated, it is almost impossible to recover as the strata is packed off in the input wells. The rate at which the oil will enter will depend on the permeability of the sand, its fluid content, and the head of the liquid above it. In curtailing by the use of a back pressure, a complete knowledge of all possible sands exposed is essential; the permeable sands must be sealed off in some way or oil must never be allowed to reach them. Of course if the sand has an extremely low permeability (almost impermeable) or is almost completely filled with connate water, the formation may be left unsealed with comparative safety. Equations (16) and (18) can be applied to calculations involving these factors.

Importance of Proper Pressure Gradients

There is one additional factor involved not only in curtailment methods which involve back pressures but in all methods which reduce the effective driving pressure during a flood. Work in this laboratory has shown that there is a definite correlation between flooding pressure gradients and yields. A typical curve of this type is shown in Figure 2. The graph shows that the oil sand requires the application of a definite pressure before any oil can be flooded from it. This holds during a flood as well as at the beginning. This capillary resistance to penetration has been called threshold pressure, and it is higher the lower the permeability of the sand. The curve indicates that the response to pressure is quite slow at first, as there are relatively few large capillaries in the sand, and it is these which are penetrated and flooded out at the lower pressures (see region A). However, the yield of oil from them is not great. Upon increasing the pressures a range is reached in which there is a large change in yields with a small change in pressure gradients (see region B). This is a critical range, as the sand is very sensitive to small changes in pressures. As the pressures are increased, range C is reached in which the sand becomes relatively less and less responsive to pressure changes. Similar curves are obtained for different permeability sands but the lower permeability sands require higher pressures to accomplish the same purpose.

It is evident that in order to operate a property most efficiently, the pressure gradients must be in the region C shown on the curve. If the production on a property is to be curtailed by reducing pressure gradients (this is a very common method) then in order to prevent any appreciable loss in the ultimate production, the flood should be kept in region C. This means that the pressure gradients must be above the

critical range. In general it may be concluded that any reduction in pressure gradients results in a loss of oil but these losses only become of first magnitude in the range B.

Permeability and Pressure Gradients

Since the pressures required to bring a core into the non-critical region C is higher the lower the permeability of a core, it would be expected that low permeability sands are more sensitive to changes in pressure. It is to be expected, then, that a curtailment in production by a reduction of the effective driving pressures would affect the low permeability strata most adversely. There is a favorable compensating effect, however. The low permeability formation takes the water more slowly and therefore the linear distance over which the pressure drops (the distance from the well through the bank of oil ahead of the flood front) is smaller than in the case of a high permeability sand in which the flood has penetrated for some distance. This means that during a given period in the life of a flood, the low permeability streaks are being automatically subject to higher pressure gradients than similar high permeability streaks which are being flooded at the same time. For equal liquid penetrations there is no appreciable difference in pressure gradients in the high and low permeability strata.

Pressure Gradients in Various Parts of the Pattern

There are parts of the sand which are subject to higher pressure gradients than others during the life of the flood. An examination of the pressure gradients present in a five-spot will indicate these regions (see Figure 3). The picture would be similar for other patterns. The most efficient flooding will be done in the sand around the input and producing wells, as the pressure gradients are highest in this portion of the sand. It is therefore safest to reduce the effective driving pressures during the early and later life of the flood but not during the intermediate stages, as the gradients are normally lower at such times. When water is first injected into the input wells, the pressure gradients are extremely high since most of the pressure drop takes place across the water and oil bank which is built up. This gradient continues to be high for some distance of penetration and the effective driving pressures are probably up in the region C at least for the sand of average permeability. This effect is additive to the normally high pressure gradients found near a well. The safest time to curtail a flood is, therefore, during its early life.

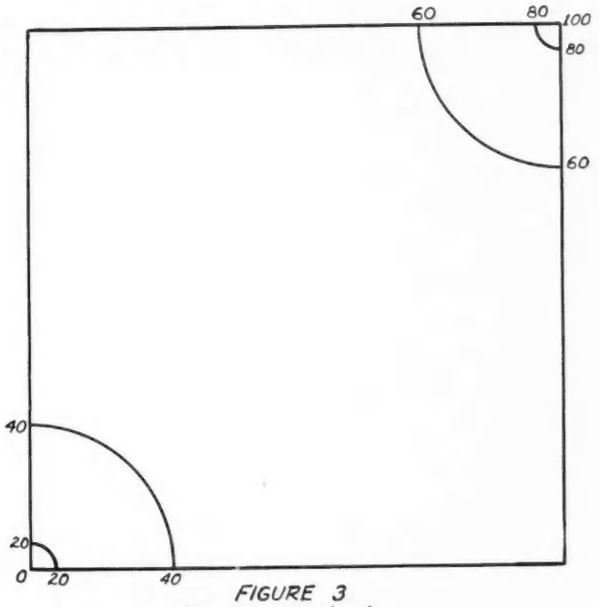

FIGURE 3
Pressure gradients in a five-spot quandrant

Application of Back Pressure Similar to Delayed Drilling

In applying a back pressure to the producing wells, the resulting production method is a combination of delayed drilling and the ordinary intensive program usually used. This results in a delay in the production in the looser streaks to a greater extent than in the tighter strata. An examination of Figure 1 will show how this is true. The back pressure of oil on the high permeability formation acts directly upon the liquid which almost completely saturates that strata. On the other hand, the same pressure when applied to the low permeability sand acts through a section partially saturated with liquid upon the bank of oil which is preceding the flood front. The back pressure then has a greater retarding effect upon those formations from which production has broken into the well than on those which have not produced oil in the well. This tends to hold back the flow in the higher permeability streaks to a greater extent than in the low permeabilities and is therefore analogous to development by delayed drilling. Such a program will then mean somewhat of a decrease in the water costs, as the flood front in the tighter formation tends to advance at a rate more closely approaching that of the more permeable sections.

The oil which is penetrating the low permeability sand from the well (see Figure 1) and the oil which is ahead of the flood front compress the gas between them, causing it to go into solution. This increases the natural energy in the oil which will aid in its production when it breaks into the well from the particular stratum involved.

Flowing Producing Wells

The possibility of flowing the producing wells during a curtailment period is mentioned elsewhere in this report and an equation derived for the conditions necessary during its application (see equation 15). Since it is a special type of back pressuring it will be considered here. One of the big advantages of producing by flowing the wells is that the lifting costs are practically eliminated. Any process which will reduce operating costs at any time and especially during curtailment is of great importance. There are certain disadvantages which must also be considered. Any column of liquid which is allowed to build up in the producing well cancels some of the beneficial effect of the hydrostatic head of water in the input well necessitating correspondingly higher pressures from the pumps to maintain a given effective driving pressure. Since the effective driving pressure is to be decreased during curtailment, the disadvantage just

mentioned for producing by flowing may not be of any great consequence. Under normal conditions it would be an important factor.

Summary of Discussion on Curtailment Method 4

Advantages:

1. Back pressure keeps gas in solution in the oil while it is in the formation, thereby reducing Jamin action giving a more efficient flow for a given driving pressure.
2. Production is analogous to delayed drilling, as the production from the looser streaks is more curtailed than in the tight streaks.
3. If the wells are to be flowed the cost of producing will be reduced as the pumping costs are practically nil.
4. No loss in reservoir energy as gas is kept in solution.

Disadvantages:

1. There is a danger of losing oil to a thief sand which has not been packed off in the producing well.
2. Care must be exercised to keep all the water pumped off, as it will not only hurt production but also cause caving.
3. Since the pressure gradients will be reduced during curtailment, that part of the sand which is flooded during this period will yield less oil than normal. The extent of this loss will be determined by the permeability of the sand, the original pressure gradients, the reduction in the effective driving pressure, and the period of the life of the flood during which curtailment takes place.
4. The beneficial effect of the hydrostatic head of water in the input wells is partially offset by a head of oil in the producers.

Method 5

Curtailment Accomplished by Reducing Pressures on Input Wells to Such Extent as to Remain Within the Allowable When the Producers Are Pumped.

In this method conditions are very similar to those present in normal production, with the exception that the pressure gradients are lower. The same reasoning applies here as in the previous case and the extent of the production losses will depend upon the conditions. Equation (9) gives the mathematical relationships of the variables involved in this method.

This is one of the easiest curtailment methods to apply as all adjusting is done at the pressure plant. The application of some definite back pressure or the attempt to keep the liquid level below a thief sand requires special adjustment while in this method the production goes on very much as usual.

Summary of Important Points Pertaining to Curtailment Method 5

Advantages:

1. Simplicity of putting method into operation.

Disadvantages:

1. Since the pressure gradients will be reduced during curtailment, that part of the sand which is flooded during this period will yield less oil than normal. The extent of this loss will be determined by the permeability of the sand, the original pressure gradients, the reduction in the effective driving pressure and the period of the life of the flood during which the curtailment takes place.

Method 6

Curtailment Accomplished by Reducing Pressures on Input Wells, Allowing a Back Pressure of Oil to Build Up in the Producers, and Pumping Off Only the Water and Allowable Oil

This method is essentially a combination of Methods 4 and 5 and therefore the discussion under those headings will apply here as well. The mathematical relationship between the variables involved is given by equation (8). Such a method will apply where there is a danger of losing oil to a thief sand if any appreciable back pressure is allowed to build up.

Summary of Important Points Pertaining to Curtailment Method 6

Advantages:

1. Back pressure keeps gas in solution in the oil while it is in the formation, thereby reducing Jamin action and giving a more efficient flow for a given driving pressure.
2. Production is partially analogous to a delayed drilling program, as the production from the looser streaks is more curtailed than in the tight streaks.
3. No loss in reservoir energy as the gas is kept in solution in the oil while it is in the formation.
4. This method is adaptable to application to properties in which a thief sand is exposed in the producers.

Disadvantages:

1. Since the pressure gradients will be reduced during curtailment, that part of the sand which is flooded during the period will yield less oil than normal. The extent of this loss will be determined by permeability of the sand, the original pressure gradients, the reduction in the effective driving pressure, and the period of the life of the flood during which the curtailment takes place.
2. The beneficial effects of the hydrostatic head of water in the input wells are partially offset by the head of oil in the producers.

This concludes author Yuster's discussion of the various means of curtailing wells. In the succeeding chapters of the series, which are to appear in early issues, he takes up case history studies of particular properties that have been curtailed by different methods.

Rotary Drilling Line Buying Trends

TO THE scientist in his laboratory is due much of the credit for the development of the modern rotary drilling line. But much more credit is due the driller, who works in the vast laboratory of the oil fields under the real conditions that the scientist can only hope to simulate.

The modern rotary drilling line is the answer to definite demands. When the rotary method came in it found the driller in need of lines specially developed for his work. He made out for some time with whatever seemed best to meet his requirements—and then he called on the rope manufacturer to give him something that would serve his purpose better. Since that time he and the manufacturer have been working closely together. Between them they have arrived at the point of setting up quite accurate standards to guide them in the selection of lines for particular sets of conditions.

The record of shipments from a rope manufacturer's Fort Worth warehouse tells an interesting story of the types of lines now going into service. It shows pretty well the character of work being done and indicates, to some extent, the kind of service conditions that are being encountered.

The lengths of rotary drilling lines shipped from this warehouse during the past year shows that drillers today recognize the economy of buying long lengths, so that worn sections may be discarded and the rope advanced. If short lengths are purchased, the whole rope must be discarded when a certain section wears out. Deeper drilling may also have played some part in increasing some of the lengths. The percentages in which these lengths were taken out were as follows:

1050 feet or less.....14%
1050 to 1250 feet.....33%
1250 to 1450 feet.....25%
1450 to 2500 feet.....28%

Diameters were as follows:

1⅛ inch 60%
1 inch 35%
⅞ inch 5%

Although not shipped from this warehouse, lines of 1¼ inches diameter are increasing, particularly in the deepest producing areas.

Grades of material showed up in this order:

Improved Plow Steel.....85%
Plow Steel 15%

These figures, of course, would vary somewhat in different localities.

The figures show a decided preference for preformed drilling lines. Thus:

Preformed Lines 70%
Ordinary 30%

The percentage of preformed lines ran higher, of course, in the longer lengths, in the larger diameters and in the higher grades. For example, in the lines over 1450 feet slightly more than 90 percent were preformed. In the lines between 1250 and 1450 feet, 82 percent were preformed. The lines between 1050 and 1250 feet showed 60 percent preformed.

Something over 41 percent of the lines were equipped with independent wire rope center. Of these lines with independent wire rope center more than 67 percent were preformed.

The construction in most cases was 6 x 19 Seale patent—although, of course, there were exceptions to this.

These are dull, dry figures—but a number of interesting facts emerge from them. Most of these facts relate to the present status of the preformed wire line.

It is well understood that, as drilling goes deeper, the swing is more to the preformed line. But the fact that over 90 percent of the lines in the longest length classification are preformed will be news to many.

The figures here given show the thorough way the preformed wire line has taken over the independent wire rope center. Engineers are sold on having this type of rope preformed.

It was the oil industry more than any other that developed the preformed line with independent wire rope centers. Up to the time preforming was introduced, the independent wire rope center was not entirely satisfactory. The relationship between the rope center and the strands was not always a friendly one. It was marred, literally, by too much friction—and all the theoretical advantages of the independent wire rope center were not secured in actual operation. When preformed strands were laid around a preformed wire rope center the condition was greatly improved. Years of experience with this line has proved its ability to give long and satisfactory service. The line was really developed through the thorough testing it received in the oil country. The rotary drilling fraternity has made an important contribution to the whole of American industry.

In developing satisfactory lines for rotary drilling the manufacturer had to provide rope qualities of a high order. The demand is for a line that is easily strung, that spools well at all loads and speeds, that does not whip excessively, that returns the idle block rapidly and that resists the fatigue of constant bending over drum and sheaves. The manufacturer has come through. The rotary driller now has lines with all these virtues.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Mexican Situation

Hull calls Mexico's hand . . . Demands submission to arbitration or immediate settlement . . . Cabrera has two proposals . . . Full collection near impossible

BRITISH and American oil men whose Mexican properties valued roundly at $400,000,000 were expropriated by the presidential decree of Cardenas March 18 looked with approval upon the stiffening of the attitude of the United States department of state towards Mexico's attitude with reference to payment for farm and agrarian properties confiscated from Americans during past decade.

The note of Secretary of State Cordell Hull, delivered to Mexico August 23, was a combination of a sharp reprimand, a thinly veiled threat of possibility of severance of friendly relations, and a demand that Mexico either make an immediate definite offer for settlement of claims or submit the matter to arbitration as provided for by treaty between the two nations.

Demands Prompt Action

Prompt action by the Mexican government to settle the claims of American former owners of more than $10,000,000 worth of farm lands expropriated by Mexico since 1927, was demanded.

While directed entirely to the agrarian situation, the note is seen as laying down the principles to be followed by the Washington government in seeking compensation for the oil properties recently seized by Mexico.

The note betrayed strong impatience with the Mexican attitude on the question of making reimbursement for the properties taken over.

Mexican Attitude Illegal

Hull told the Mexican ambassador that the United States considers Mexico's argument in justification of the seizures as "counter to the basic precepts of Interational Law and of the law of every American republic, as well as counter to every principle of right and justice upon which the insituations of the American republics are founded."

The Mexican defense, as outlined in the note, was that any government, on the ground that its municipal legislation so permits, or on the plea that its financial situation makes prompt and adequate compensation onerous or impossible, may seize properties owned by foreigners within its jurisdiction, utilize them for whatever purpose it sees fit, and refrain from providing effective payment therefor, either at the time of seizure or at any assured time in the future.

"If such a policy were to be generally followed," the note asked, "what citizen of one republic making his living in any of the other 20 republics of the western hemisphere could have any assurance from one day to the next that he and his family would not be evicted from their home and bereft of all means of livelihood? Under such conditions, what guarantees or security could be offered which would induce the nationals of one country to invest savings in another country, or even to do ordinary business with the nationals of another country?"

Pointing out that the Washington government has sought to adopt friendly processes for solution of the controversy, the secretary charged that "instead of using these recognized and orderly methods, the government of Mexico in effect suggests that whenever special conditions or circumstances obtain in any one country, that country is entitled to expect all the other nations of the world to accept a change in the settled rules and principles of law, which are domestic quite as much as international, solely in order to assist the country in question to extricate itself from difficulties for which it is itself entirely responsible.

Would Imperil Civilization

"Adoption by the nations of the world of any such theory as that," Hull declared, "would result in the immediate breakdown of confidence and trust between nations and in such progressive deterioration of international economic and commercial relations as would imperil the very foundations of modern civilization.

"The policy of expropriation of these lands without any payment as required by law and equity and justice, places this government in a situation where it must either assert and maintain with all vigor the doctrine of just compensation, or else acquiesce in the repudiation and abolition of that doctrine. Obviously it cannot adopt the latter course."

Cabrera's Proposal

Attorney Luis Cabrera, old-line revolutionist, former secretary of the treasury under President Carranza of Mexico, and presently one of the most influential independent commentators in the republic, has recently published a series of articles in leading Mexican newspapers, in which he examines the situation of the petroleum industry in full and comes to conclusions which may point the way to a solution of the difficulty.

Cabrera rejects both the American idea that the Mexican government might abandon the idea of the expropriation and the Mexican idea that the expropriation debt can be allowed to become chronic until the companies forget about it. Assuming that expropriation cannot be considered consummated until Mexico is able freely to sell and export all her oil production, and that the companies will prevent this consummation until they are satisfied that they will be paid in full, Cabrera tries to demonstrate that the positions of the American and British governments are fundamentally the same—either cash payment in full or no expropriation—and that these positions are irreconciliable with the decree of expropriation.

Two Propositions

After examining the theoretical solutions and suggesting the advisability of compromise, the commentator goes on to suggest two possible practical solutions: (a)—That the Mexican government turn over the expropriated properties in trust to a common representative of the companies for a stipulated period, until the companies are able to reimburse themselves, or, (b)—That a semi-official corporation be formed, pooling all the petroleum resources of the country, with shares to be issued to the government and to each of the companies in proportion to their respective contributions. The shares of the companies would be redeemable from time to time by the governement, and over a long period the government would gradually redeem these shares and eliminate foreign participation in the Mexican petroleum industry.

While he recognizes the difficulties inherent to any solution, and on the

whole considers the expropriation to have been one of many blunders, Cabrera desires to see the principle of nationalization saved with as little friction as possible. Since he represents the old individualistic — nationalistic sector that made the Revolution and the Constitution of 1917—the same sector that was largely bamboozled, on nationalistic grounds, into supporting the expropriation—his views are considered important. Whether they will prevail over the frankly communistic tendencies of the Confederation of Mexican Workers, Lombardo Toledano, and the present government of Mexico—all of which are minority sectors—still remains to be seen.

Little Hope to Collect

Little possibility that American and British oil companies whose properties were expropriated by Mexico will ever be able to collect the value of the assets they lost is seen by the Foreign Policy Association in a report on the Mexican oil dispute by Charles A. Thomson, made public this week.

While the value of the American and British holdings involved is generally estimated at from $350,000,000 to $450,000,000, the Mexican government has placed the figure at $100,000,000 the report pointed out.

Even at this figure, it was commented, Mexico would be required to make annual principal payments of $10,000,000 if the debt is to be wiped out within the maximum period of 10 years allotted by the expropriation law. At the same time, the total revenues of the Mexican government are only approximately $100,000,000 a year. "Thus," the report stated, "yearly payments on the oil debt would be equivalent to at least one-tenth of the government budget.

Can't Meet Payments

"There seems no possibility of securing $10,000,000 or anything near it from Mexico's oil exports," it continued. "For the three years 1934-36, Mexico's annual petroleum production was valued at 133,000,000 pesos. Exports comprised approximately 60 percent of production, or an annual estimated value of about 80,000,000 pesos. The government is reported to have ordered one-fifth of export proceeds set aside for indemnification of the companies. On the basis of 1934-36, this might be estimated at 16,000,000 pesos, which at the present rate of exchange would not total much more than $3,000,000 annually, or at the former rate would approximate $4,500,000.

"For the time being," Thomson said, "the unwillingness of the petroleum companies to buy oil which they regarded as their own has promoted an almost airtight boycott of Mexican oil in British and American markets. Consequently exports have been materially curtailed. According to available statistics, Mexico exported during April, May and June 2,114,000 barrels of oil, as compared to 5,560,000 barrels for the same period in 1937. It was reported that Germany and Italy had absorbed most of the oil exported since expropriation. On July 6 formal announcement was made of the sale of $10,000,000 worth of Mexican government oil to W. R. Davis & Company of New York City, the bulk of shipment to go to Germany and Italy and a part to Sweden."

Canadian Fields

First Turner Valley completion south of Highwood River . . . Two-mile west outpost encounters Madison limestone . . . Wildcat to be drilled at Clearwater

An incentive to southwesterly development of the Turner Valley field of Alberta, Canada, was given last week with assurance that Royalite Oil Company Ltd.'s No. 32 would be an excellent producer. The well, given acid treatment last week, furnishes a ¼-mile southwestern extension to the field, and, what is more important, is the first well to be drilled in south of Highwood River. Location is Legal Subdivision 8, Section 17, Township 18, 2-w5. Development in this direction had been discouraged several months ago when National Petroleums Ltd.'s No. 2, Legal Subdivision 14, Section 9, Township 18, 2-w5, encountered a fault and resulted in only a small producer—rated at 177 barrels daily potential.

A mile south and slightly east of Royalite's No. 32, D. & D. Oils Ltd.'s No. 1 was spudded last week on Legal Subdivision 12, Section 9, Township 18, 2-w5. There are several inactive wells in the area where drilling had been delayed because of the unfavorable showing at National Petroleums' 2, and it is believed that the successful completion of the Royalite well may revive them.

In the extreme north end of Turner Valley field, Royalite Oil Company Ltd. spudded No. 35 on Legal Subdivision 7, Section 27, Township 20, 3-w5, which was drilling at 900 feet as the week closed. The test is close to this company's No. 29 which revived interest in the northern area when successfully completed several months ago, and is 1 mile southwest of Home Oil Ltd.'s Millarville 1, Legal Subdivision 6, Section 33, Township 20, 3-w5, which was drilling at 5470 feet last week.

Abandon Deep One

Phillips Petroleums Ltd.'s No. 1, Legal Subdivision 16, Section 16, Township 20, 3-w5, 1½ miles south and slightly west of the Royalite company's new venture, was abandoned at 7400 feet last week because of mechanical difficulties. The well had previously encountered a repetition of the Benton at that depth, which made the hole deeper than expected.

Okalta Oils Ltd.'s 6, Legal Subdivision 3, Section 30, Township 18, 2-w5, 2 miles west of production on the southwest flank, and deepest hole in the British Empire, encountered the Madison limestone last week at 9735 feet. Casing is being run to a point 10 feet in that formation.

Three other Turner Valley tests are in the producing horizon, two having encountered the Madison during the past week.

A preliminary test of Clearwater structure, 65 miles west of Innisfail, Alberta, is to start this week by Canyon Oils Ltd. and Calgary Gas Company. Location is on Section 31, Township 34, 9-w4. The hole will be carried to approximately 2500 feet to obtain geological information, and if showings are favorable a second test will be carried to the producing horizon. Directors of the Canyon company are four young university graduates of the United States: C. Spencer Clark of Seattle, Wilder H. Ripley of Chicago, Charles T. Brown of Philadelphia, and Thomas B. Hare of New York.

North Taber Royalties Ltd.'s No. 1, Legal Subdivision 7, Section 10, Township 11, 15-w4, encountered strong unexpected gas flows in the Pakowki and Milk River sands. Bottom was at 715 feet, and 10-inch string is being carried. The well is to be carried to the Ellis sand, expected at 3000 feet, and if commercial production is not obtained at that depth will be carried on down to a maximum depth of 6000 feet.

Following are late reports from some of the tests on other Alberta wildcat structues: Battleview—Battleview Oils Ltd.'s No. 1, testing at 1893 feet; Pacalta Oils Ltd.'s No. 1, waiting at 2337 feet; Altoba Oils Ltd.'s No. 2, testing at 2311 feet. Bearberry—Petroleum Structures Ltd.'s No. 1, drilling at 1022 feet. Birch Ridge—Elbow Oil Company Ltd.'s No. 1, idle at 5520 feet. Brazeau—Home Oils (Brazeau) Ltd.'s No. 1, casing at 4520 feet. Bridge Dome—Bridge Dome Oils Ltd.'s No. 1, spudding. Calling Valley—Sentinel Oils Ltd.'s No. 1, resuming from 6800 feet. Cardston—Franco Oils Ltd.'s No. 1, waiting at 4580 feet. Clearwater—Canyon Oils Ltd.'s No. 1, hauling material to location. Del Bonita—Adams Oils Ltd.'s No. 1, drilling at 100 feet. De Winton—Marquis Oil Company's No. 1, resuming from 4500 feet. Duncan—Spindletop Oils Ltd.'s No. 1, waiting at 2315 feet; Ranchmen's Oil Company Ltd.'s No. 1, fishing at 7230 feet. Highwood-Sinclair—Green Valley Petroleums Ltd.'s Banner 1, mechanical trouble at 6202 feet. Hunter Valley—Hunter Valley Oil Company Ltd.'s No. 1, standing at 8274 feet. Kootenay Dome—Roxana Petroleums Ltd.'s No. 1, drilling at 3942 feet. Lethbridge — Lethbridge Southern's No. 1, testing at 4055 feet, and Lethbridge Petroleum & Refineries Ltd.'s No. 1, cementing casing at 2915 feet. Magrath—Lyons-M'Intyre's No. 1, standing at 3630 feet. New Valley—New Valley Oil Company Ltd.'s No. 1, casing at 3430 feet. Pincher Creek—Weymarn Petroleums Ltd.'s No. 2, waiting at 6432 feet.

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14"x7¼"x14"	Steam-B	7¼"	29.16
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14"x7"x18"	Steam	6¾"	27.36
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14"x7¼"x18"	Steam	7¼"	25.92
15"x7¾"x20"	Steam	7¾"	38.16

Other Sizes Correspondingly Low

FOR OIL WELL PUMPS
PRICE

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MEN IN THE INDUSTRY'S NEWS

CONTINENTAL OIL COMPANY DIVIDES LAND DEPARTMENT EAST OF THE ROCKIES INTO TWO DIVISIONS

W. C. MacMILLAN TO HEAD NORTH REGION; AND W. E. HAGGARD THE SOUTH

GROWTH of Continental Oil Company along the Gulf Coast has necessitated the division of the company's land department into two regions east of the Rocky Mountains. As a result, W. C. MacMillan has been promoted from assistant manager of the land department to regional manager of the northern division, and W. E. Haggard, former manager of the department, has been named manager of the southern region. MacMillan will make headquarters at Ponca City, Oklahoma, and Haggard will be located at Houston, Texas. The latter district will include Texas, Louisiana, Mississippi, southern Arkansas and part of New Mexico. The northern region will be comprised of Oklahoma, Kansas, Illinois, northern Arkansas, Colorado, Wyoming, Montana, South Dakota and northern New Mexico.

MacMillan, who had been assistant manager of the land department since January, 1938, was born at Williamstown, Masachusetts, and attended Brown University. His first work in the oil industry was with Marland Oil Company as instrument man in the geological department in 1926. After several years in scouting and leasing work, he became assistant superintendent of the land department of Continental Oil Company in 1933. A few months later he became superintendent of the department, and then advanced to assistant manager.

Haggard was born in Bloomington, Illinois, and graduated from the Oklahoma City high school. He was a statistician in the purchasing department of Empire Gas & Fuel Company at Bartlesville from 1916 to 1919. The next five years he was lease and field production man for Emerald Oil Company at Winfield, Kansas. The middle of 1924, saw him employed by Continental Oil Company as lease agent at Denver, from which he advanced to purchasing agent and later to land superintendent. In 1928, Haggard was made assistant superintendent of land operations and moved to Ponca City, Oklahoma. In the same year, he became superintendent of the department. He became general superintendent of the land division in 1933, and in 1936 was named manager of the department.

W. C. MacMILLAN

J. ALTON SIMMS, El Dorado, who has been representing the Arkansas Board of Conservation recently in the Miller County and Shuler, Union County, oil fields, last week was named assistant conservation agent, succeeding Lee J. Timberlake, Texarkana. Timberlake was discharged a week ago for his criticism of the board and his public support of R. A. Cook, Little Rock, in the recent Arkansas primary gubernatorial campaign.

I. G. LAIDLOW, technical assistant of drilling for Trinidad Leaseholds, Limited, at Point-a-Pierre, Trinidad, British West Indies, and R. H. Ludeman, purchasing engineer of Anglo-American Purchasing Company, New York, were visitors in Houston during the week.

DON N. HILL, assistant manager of the land and leasing department of the Skelly Oil Company, Tulsa, has been spending some time in Illinois, where the company is becoming active. W. W. Simpson, who has been scouting western Kansas, has been transferred to Illinois with headquarters at Mattoon.

C. M. CLARK is resident geologist in charge of a new district office opened last week in Mattoon, Illinois, by Indian Territory Illuminating Oil Company. T. C. Heistand, Bartlesville, was in Mattoon last week to aid in establishing the office, which is located in the Demaree Building.

JACK RUSHMORE on September 1 will become head of the land and leasing department of Gulf Oil Corporation at Tulsa, succeeding B. F. Bridges, who now heads the company's Indianapolis office which supervises operations in Illinois, Kentucky, Indiana, Michigan and West Virginia. Rushmore was formerly zone agent for Gulf at Denver.

GLENN W. CLARK, a former member of the legal department of Cities Service Oil Company, has been named general attorney for Panhandle Eastern Pipe Line Company. He will make his headquarters in Kansas City.

W. I. CUNNINGHAM has been made geologist in charge of Bishop Oil Company's California geological and land department with headquarters at Bakersfield. Cunningham has been scout and geologist for the company in the Mid-Continent for a number of years. Carl Todd has been appointed assistant geologist with headquarters also at Bakersfield.

CLIFF BURGESS, superintendent of the East Texas Division for Petroleum Pipe Line Company, left Gladewater August 21 for the Big Horn Mountains in Wyoming for a two-week vacation. He was accompanied by his wife and son.

NATHAN PITCAIRN, scout for Southern Minerals Corporation in the Corpus Christi district, is in Pennsylvania on a two-weeks vacation.

J. V. ADAMS, of Adams, Lefevre and Spice, San Antonio, recently returned from a vacation in Colorado.

M. A. (AVE) RICKETS, scout for Sinclair-Prairie Oil Company at Corpus Christi, is recovering from an appendectomy.

M. M. KORNFELD, consulting petroleum geologist and geological engineer, also is doing valuation work. His offices are at 301 Second National Bank Building, Houston.

W. R. (BILL) HALL, scout for Continental Oil Company in North Texas, checked out of Wichita Falls headquarters early last week for a vacation at his former home, Copperas Cove, Texas.

W. ROSS LEARD, petroleum engineer for Magnolia Petroleum Company, Dallas, has been transferred to St. Elmo, Illinois, to serve as production foreman of the company's nearby properties.

J. G. (JACK) PEW, an official of the Sun Oil Company, Dallas, accompanied by his family, visited Galveston the past week for a brief vacation.

O. L. BRACE, consulting geologist, has returned from a three months trip to Greece and has reopened offices at 804 Second National Bank Building, Houston.

F. C. EMBSHOFF, newly appointed general auditor for Shell Petroleum Corporation, will take up his new duties at the company's headquarters in St. Louis, Missouri, on September 1, 1938. Embshoff was previously office manager of Shell's Houston office, where he will be succeeded by Edward H. Mueller of St. Louis.

MRS. SARAH D. HAGER, 87, died at the home of her daughter, Mrs. Matthew D. Gilbert, in Beverly Hills, California, last week. She is survived by the daughter and four sons: Lee Hager, oil operator of Houston; Dorsey Hager, geologist and oil operator of Illinois; W. D. Hager of California; and Dilworth S. Hager, oil operator of Dallas. Mrs. Hager was born in Hagerstown, Maryland, but had lived in California with her daughter the past 20 years.

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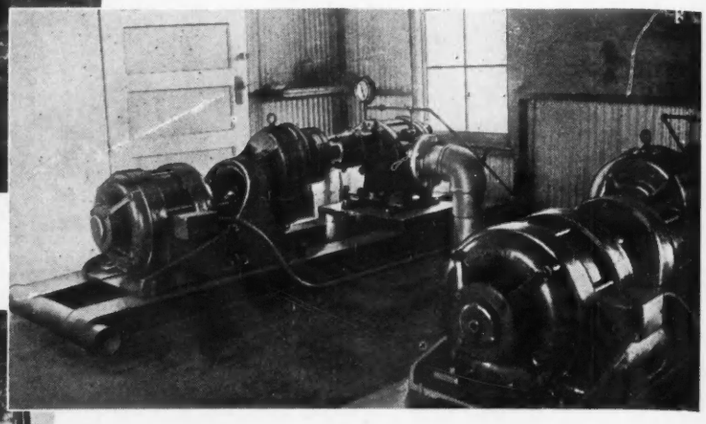

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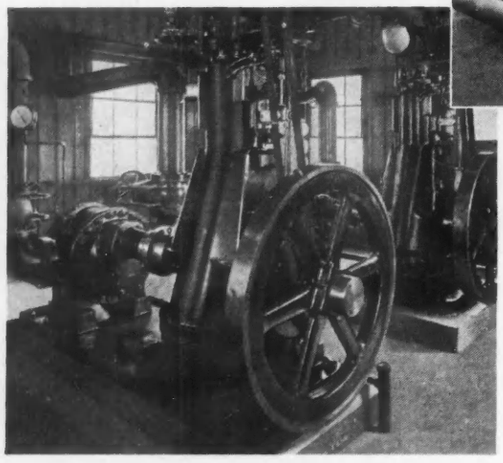

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RP8-1

THE WEEK'S NEWS SUMMARIZED

Monopoly

Books and records of oil companies are expected to come under the scrutiny of accountants of the administration's monopoly investigating committee in the near future.

Subpoenas are about to be issued for the records of companies in several industries, oil being named as among the first to be covered. It has not been disclosed what the accountants will seek, but the seizing of the records will be followed by the summoning of witnesses to Washington for hearings.

Imports

The threat of imports is as potent in breaking the price structure of the oil industry as the actual receipt of foreign oil, Russell B. Brown, counsel for Independent Petroleum Association told the committee for reciprocity information in a further plea against any reduction of the excise taxes in the proposed Venezuelan agreement.

The price structure of the oil industry, he indicated, is very delicate and disturbed easily. The mere threat that oil would be brought in would be sufficient to start quotations downward, he added.

Mexico

Telling the Mexican government in no uncertain terms that the administration is tired of its hedging over the question of making reimbursement to Americans whose properties it has expropriated, Secretary of State Hull, in a note on the agrarian seizures made since 1927, adopted an attitude which it was indicated would be maintained also with respect to the expropriated American oil lands.

Declaring in only slightly veiled language that the Mexican attitude was less than honest, the secretary said in his note that Mexico would not expect to have the rules of the game changed to get it out of a situation for which it is itself entirely responsible.

Immediate submission of some plan for making compensation or resort to arbitration as provided for by treaty was demanded.

Allowables

Arkansas' September allowable will be 500 barrels higher than August. The entire increase went to Schuler.

Louisiana hiked its September allowable to 260,260 barrels, which compares with 256,715 barrels in August. North Louisiana fields were cut approximately 5000 barrels, but South Louisiana fields gained 8000 barrels.

The largest purchaser in Eddy County, New Mexico, has cut its purchases 50 percent, meaning it will buy but 1900 barrels daily.

Shell Petroleum Corporation will reduce its South Oklahoma purchases 40 percent during September.

Oklahoma will keep the same allowable during September as it had in August, 428,000 barrels daily.

Markets

The industry's markets were unsteady during the week, due largely to the recent East Texas crude price cut. Although the reduction of East Texas crude prices had not been adopted by large buyers in that field or elsewhere, gasoline prices were generally down ⅛ cent a gallon in Oklahoma.

However, there was considerable hope that the situation would improve. Texas may adopt a two-day shutdown per week, which would relieve the market of considerable crude. Meanwhile, there were indications that other states would hold September allowables to strict levels. Both crude and gasoline stocks continued to decline.

Heaving Shale

A cooperative research project on heaving shale is being started under the sponsorship of the University of Texas. A committee to study and direct the work has been appointed, from which it is hoped some solution to this very difficult problem may be obtained, and thereby make it possible to reach crude reserves believed to underlie them.

All companies, individuals and drilling contractors who have had experience with heaving shales are asked to forward information to Dr. H. H. Power at Austin, Texas.

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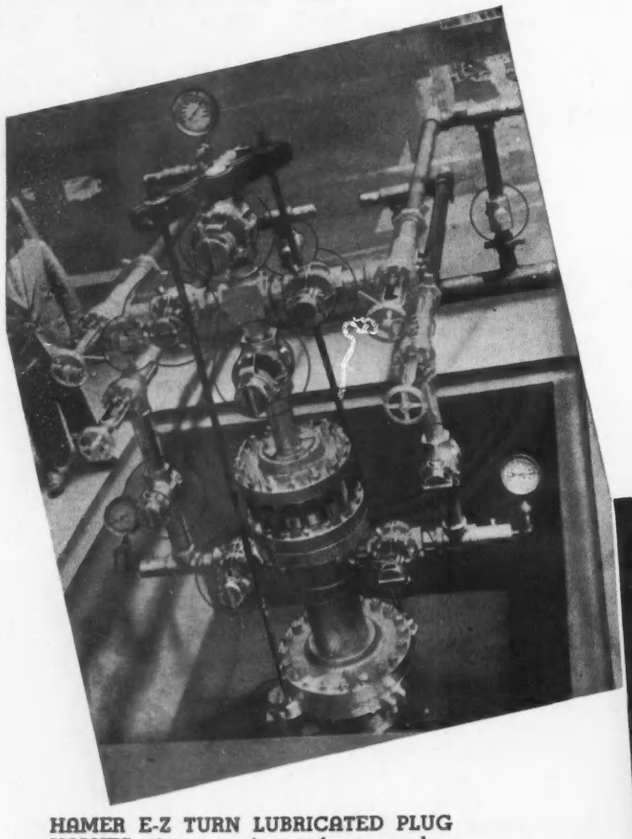

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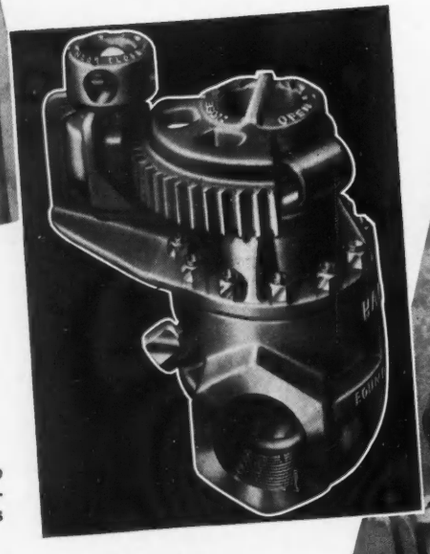

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Oil at the Capitols

Books of oil companies may be demanded by federal monopoly investigators . . . Committee again told slight import increase would wreck domestic price

Monopoly hearings start within six weeks

Records, books and correspondence of a number of the major oil companies are expected to be demanded by the administration monopoly investigating committee early next month, it was learned in Washington this week.

Revealing plans of the committee to hold public hearings within the next six weeks, Leon Henderson, executive secretary, said August 23 that subpoenas would be issued within two weeks calling for the records of companies in several industries, among them oil, and that later subpoenas would be issued for company officials who are to be called as witnesses.

It was explained that committee investigators in the field have encountered no difficulty in securing information from companies approached, and that the issuance of the subpoenas would be largely a formality to regularize the situation.

All information secured by the committee from the records which it will demand will be held strictly confidential, Henderson said, and not even the names of the companies whose books are seized will be made public. The names of the men to be called as witnesses, however, will be announced in advance of the hearings.

Members of the committee will meet early next month to decide upon dates for the hearings and the officials who are to be called to testify.

Import increase would break U. S. market

A very slight increase in imports of oil will be sufficient to break the domestic market structure, members of the Committee for Reciprocity Information have been warned by Russell B. Brown, general counsel of the Independent Petroleum Association of America.

Brown's caution was voiced in a letter to the committee, in response to a request by Chairman Henry O. Grady for his views as to the effect of imports and exports on the domestic price of crude, and the manner in which importers may use foreign oil to break prices in this country.

"Exports of petroleum aid the earnings of the domestic producer and from a producer's standpoint are very desirable but, under normal conditions, they do not cause price fluctuations," he explained. "No one would produce oil for the foreign market unless assured of a price above production cost. Furthermore, the national program for the industry, made possible by action of the states' regulatory bodies, seeks to balance supply with market demand. Their estimates of market demand include exports. In this way an oversupply of crude from domestic sources may be avoided and uneconomic variations in the price of crude prevented."

The situation with regard to imports and their effect on price, however, is quite different, Mr. Brown pointed out, for no accurate advance estimate of imports is possible and uncertainty as to how large receipts may be makes long range planning difficult.

"Our exports do not decrease the amount of petroleum available to meet the needs of the domestic market since the allowed production takes these exports into consideration," he continued.

"Imports increase the available supply, may create excessive supply, and by overloading the market drive the domestic price below production costs. This has happened in the recent past.

"A small quantity of imports can cause a price reduction. When the states have made provision for a sufficient supply of petroleum to meet the market demand, taking into consideration the expected amount of imports and the withdrawals from or additions to storage, the receipt of excess quantities of imports upsets this balance. The lower cost imports take the market from the domestic crude, which is either forced into storage or seeks a purchaser at a lower price. Other purchasers naturally seek to make purchases at this lower rate with the dan-

Start Cooperative Heaving Shale Study

Oil companies, individual operators and drilling contractors who have had experience in drilling heaving shale, are requested to forward information on their experiences to Dr. H. H. Power, Petroleum Engineering Department, University of Texas, Austin, Texas, chairman of a committee organized recently to combat the heaving shale problem on a cooperative basis.

At a meeting held in Houston a short time ago representatives of a number of oil companies formed a committee to study the heaving shale problem, realizing that the problem is such as to demand a cooperative effort. Dr. H. H. Power was named chairman of the committee. United States Bureau of Mines is also cooperating with the University of Texas and the oil companies in the proposed work.

Says Dr. Power in his appeal for cooperation:

"It has been suggested by parties interested in research that cooperative effort be instigated by companies and institutions in Texas, with respect to the heaving shale problem. Some companies apparently have made some progress in combating heaving shale. Various means have been devised, both physical and chemical, for drilling hazardous areas. In some cases correlation of data, accurately kept, has enabled the operator to profit by past experience. In other instances, case histories have apparently led nowhere.

"Accordingly, a major problem exists in the Gulf Coast area, which has not been solved satisfactorily by individual company effort. It is, therefore, believed that an opportune time exists to suggest cooperative effort. Pursuant to this suggestion, several representatives of various oil companies, the U. S. Bureau of Mines, and the University of Texas, met recently in Houston and discussed the heaving shale problem in its various aspects. It developed that much data had been collected, the results from which would be made available to any cooperative investigation proposed. It was finally agreed that the various operators, contractors, service companies, and other interested institutions, should be contacted, with a request that each organization submit to me by September 1 a summary of experience gained in drilling heaving shale, with particular reference to experience which would indicate the best possible program of investigation and research for the future. In other words, the information should be so summarized that an analysis of all such summaries will result in a crystallized set of proposals for investigation and research, designed to facilitate proper completion of wells with minimum time and expense. In this respect it is suggested that "heaving shale" be defined, and the geographical location, formation and depth be given where trouble was encountered.

"Operators are urged to submit evidence they may have available. It may be the answer to another operator's problem. It is quite possible that much of the evidence will sift down to a few simple facts and precautions. It is hoped that simple procedures will be made possible. On the other hand, if more extended research is necessary, means for providing the necessary assistance, facilities, and money should be determined. The tremendous financial considerations and development of natural resources involved demand pursuance of the problem in all its various aspects to logical conclusions.

"It is important that the problem be surveyed from all angles—physical, chemical, and geological. This will be facilitated by contacting all divisions of the organization concerned.

"In general, it is advantageous to present one summary from each organization. This summary should represent the combined findings of all concerned—production, geological, and research departments. If a difference of opinion exists in one organization, please submit separate summaries.

"Information should be placed in my hands at as early a date as convenient —September 1, if possible."

ger of starting a vicious production-race and price-cutting competition to hold markets."

Since for the most part, our exported petroleum enters markets under cartels or other forms of control which maintain high prices, it moves on a high price level, while imports come in on a low price level due, in part, to the fact that importers having great refineries such as those at Aruba and Curacao send their gasoline, lubricants, etc., to the most promising markets abroad.

"Since their costs in producing these refined products are so low, their profits from the sale of those products is so great that they could almost give away this heavy fuel oil which they send into our markets at prices which we cannot meet," Mr. Brown asserted.

Because of the cartel systems, he commented, it is practically impossible for independent producers to enter the foreign market, but they are left to the danger that imports may be used to break the domestic price because the few importers of foreign oil constitute the largest purchasers of domestic crude and by bringing in larger quantities of foreign oil they can create an oversupply which may cause a cut in price. Or, he added, they can achieve the same result simply by announcing that they will meet a greater portion of their needs by greater imports.

"An actual oversupply is not always necessary to cause a drop in price," he pointed out. "The fear of an oversupply may do this. This may be illustrated by a practice once common and not entirely abandoned. A dealer may have one car of products. He may offer it to each of ten possible purchasers. In a brief time reports have magnified this single car to ten cars. Others who have a carload lot for sale may fear an oversupply exists and take a reduced price to be sure of a market.

Pennsylvania investigation of gas to take two years

Pennsylvania's extensive investigation of the natural gas industry, embracing 200 companies in the western part of the state, will take at least two years to complete, Edward Knuff, chief counsel for the public utility commission, predicted last week.

The commission must take a complete inventory of all the property owned by the various companies under survey, which phase of the investigation alone takes months, he declared.

"This is a gigantic task," he said. "Every company must be heard individually. That's the only way the investigation can be conducted." Of the 200 firms named as coming under the inquiry, 93 have had hearings thus far.

Knuff explained the purpose of the investigation as follows:

"The investigations were authorized under Section 3 of the new regulatory law passed by the 1937 legislature. It permits the commission to impose temporary rates on companies that are making more than 6 percent profit on their investment. We decide the question of whether temporary rates should be imposed by determining what revenue they should make and allowing for expenses. If the total exceeds 6 percent, the commission is allowed to fix a rate which it deems reasonable."

Allowable Picture

Additional pipe line proration for Oklahoma and New Mexico . . . Louisiana and Arkansas raise allowables for September . . . Oklahoma continues August output

Louisiana September allowable raised slightly

Although several fields in North Louisiana were given reduced allowables, Louisiana's total allowable for September was raised slightly. The state in September will have a combined daily allowable of 260,260 barrels, as compared with 256,715 barrels in August. The September allowable order gave North Louisiana a combined allowable of 70,000 barrels. South Louisiana was increased 8095 barrels to 190,260 barrels. Eleven districts in South Louisiana were given increased allowables for September.

Following on the heels of a recent 25 percent reduction of purchases by Caddo Crude Oil Purchasing Company, which buys the majority of the crude in the field, Lisbon allowable for September was reduced 2000 barrels daily to 9000 barrels, according to the allowable schedule announced last week by the Louisiana Conservation Commission.

The Travis Peak (Holloway) horizon at Cotton Valley had its allowable cut 500 barrels daily to 6000 barrels for September. The two lower Marine oil wells were not affected as they are on a separate individual allowable of 700 barrels daily each. The other lower Marine wells there which produce gas-distillate are classed as gas wells.

The Louisiana side of Rodessa was cut 3000-barrels to 35,000 barrels daily. Other fields in North Louisiana, none of which have an individual allowable, were given 20,000 barrels.

Oklahoma leaves allowable unchanged

Daily allowable output for Oklahoma oil fields was set at 428,000 barrels daily, identical with the August figure, when the corporation commission held a brief hearing August 25 to fix the September figure. The day previous producers and purchasers met with W. J. Armstrong, chief conservation officer, and indicated that continuation of an allowable 100,300 barrels daily below the recommendation of the United States Bureau of Mines would be adequate.

Shell cuts south Oklahoma purchases

Crude oil purchases of Shell Petroleum Corporation will be reduced to 40 percent of average production of August for the September runs through the Shell pipe line system, from the older fields of Southern Oklahoma. The reduction is similar to that adopted by Pure Oil Company, effective August 1. Carter Oil Company also has reduced its purchases in these fields.

Pure Oil Company September 1 will resume 100 percent purchases of oil from leases to which it is connected in Healdton field, southern Oklahoma. The company August 1 curtailed purchases to 40 percent of previous average runs due to surplus accumulation of heavy oil while refinery at Muskogee was shut down for repairs and later by strike.

Recently producers appealed to the federal government for aid in gaining market. A reply last week from Elmer Thomas, Oklahoma senator, was to the effect that the government is powerless in the matter.

Arkansas raises allowable 500 barrels

August allowable figures in Arkansas will stand as September allowables, except in the Permian (Reynolds) lime of the Schuler field, which was hiked 500 barrels daily to 1500 barrels, for five wells, the Arkansas Board of Conservation decided last week.

The board did not set an allowable for the Magnolia-Village field, pending further development there. Two southwest edge tests, the second and third in the Village field, have shown salt water in production tests.

The figures for September for other fields set at the same figure as for August are: Buckner, six wells, 1200 barrels; Miller County (Rodessa), one hundred and one wells, 6874 barrels; Jones sand (lower Marine,) Schuler, 70 wells, 21,000 barrels. In continuing the present allowables the board followed the suggestion of field operators.

Buyer cuts New Mexico purchases 50 percent

A reduction of the proration allowable of fields in Lea and Eddy Counties of New Mexico to harmonize with crude purchasers nominations may be ordered by the Oil Conservation Commission as result of the largest buyer having cut its takings 50 percent effective August 23.

The extra proration burden was imposed by Sinclair Prairie Oil Marketing Company when its runs were reduced from 3800 barrels to 1900 barrels daily. The oil is handled by the Texas-New Mexico Pipe Line Company on consignment to Sinclair Refining Company's refinery at Houston. Other Eddy County buyers, who are handling 2872 barrels daily, have not indicated if they will boost their nominations.

The commission ignored pipe line proration when Shell Petroleum Corporation applied pipe line proration in Lea County, effective April 10, and is crediting the

[*Continued on page 58*]

Pipe Line News

New oil outlets for the Centralia field in Illinois and the Village field in Arkansas are being planned

Complete 75-mile survey in Illinois

An engineer's survey for a proposed crude oil pipe line from Centralia to Lawrenceville, Illinois, a distance of 75 miles, was completed last week for The Texas Company. The line would link the Lake Centralia and other fields between Centralia and Lawrenceville, supplying crude to the company's refinery in the latter city. At present, the company's production in the Lake Centralia field is carried through a 9-mile 4-inch Texas Company pipe line to Sandoval, from where it is routed through the Illinois Pipe Line Company's carrier system to Lawrenceville.

Shreveport line is completed

Atlas Pipeline Corporation last week completed a 4-inch line from its Jewella refinery in the suburbs of Shreveport to R. E. Allison's Ellerbe 1, Section 27-18n-14w, Caddo Parish, also just outside the city limits, and began to run oil at the rate of 500 barrels daily to its refinery, a distance of 3 miles. The price paid is regular price paid for gravity of 40 and above which is $1.22. Allison's well completed July 15, flowing 499 barrels daily has been shut in since it filled 2 500-barrel tanks on location. Crude from the Allison well is 43.8 gravity, but is sour oil. Atlas, which is controlled by Lion Oil Refining Company, is also handling a large amount of Schuler, Arkansas, sour crude. It buys 40,000 to 60,000 barrels monthly of Sligo sweet oil to blend with the sour crude.

Standard Pipeline Company has finished buying right-of-way for a recently announced pipe line from Haynesville, Louisiana, to the new Buckner, Village and Magnolia fields, all in Columbia County, Arkansas. Recent showing of salt water in two tests at Village has eliminated the pressing need for pipe line outlet there, so the pipe line company is not rushing the line as fast as at first planned.

Michigan gas line is approved

Plans for organization of the Northland Natural Gas Corporation to serve the village of Evart and Barryton were approved last week by the Michigan Public Utilities Commission.

Organizers of the company, which has been authorized to issue $50,000 worth of stock, are Mrs. Hazel C. Sheibe, organizer and president of the Sherritt Oil & Gas Company, which takes production from Sherman Township in Isabella County and Sheridan Township in Mecosta County; R. A. Whitehead, official of the Independent Natural Gas Producers Association of Michigan, and George R. Reed, Grand Rapids. The Northland corporation will purchase gas from the Sherritt company for distribution to its customers.

Chapel Hill gas to be piped to big field

A market outlet for the high pressure gas and distillate production from the Hunt Oil Company's S. H. Bradley 1, lower Trinity discovery at Chapel Hill, Smith County, is to be established by the construction of short lines to the Joiner section of the East Texas field. This wildcat produced 7776 barrels of distillate, varying from 61.5 to 63.8 degrees, during a 30-day special test authorized by the railroad commission. The test was concluded August 18. A maximum volume of 90,000,000 cubic feet of gas withdrawal was allocated for the period, and the well was produced through ⅛-inch tubing choke. Tubing pressure varied from 1470 pounds to 2850 pounds, while the casing pressure ranged from 2600 pounds to 3150 pounds.

Hunt Oil Company plans to build a 4-inch distillate line from the well to a tank car rack at Overton, and a 6-inch gas line to its properties in the Joiner area, providing a reasonable proration allowable is granted by the commission. The company will utilize the gas for fuel and repressuring its East Texas leases. Additional drilling is contemplated for the Chapel Hill area, which produces from the porous zone in the upper part of the lower Glen Rose at 7402-7528 feet. Location for the discovery well was made by Sun Oil Company's geological department near the center of an anticlinal structure at first suggested by field mapping, core drilling and subsurface mapping by the company in 1931. Additional subsurface work was completed in 1934-35, and subsequently confirmed by reflection seismography in 1937. Sun Oil Company was instrumental in obtaining dry hole contributions from other lease owners to apply against the original deep test.

Texas intangible pipe line evaluations fixed

The Texas Tax Board has announced the following intangible pipe line tax evaluations:

COMPANY	1938 Evaluation	1937 Evaluation
Atlantic P. L.	$6,000,000	$5,000,000
Gulf P. L. Department	3,000,000	3,171,360
Humble P. L.	11,300,000	10,670,920
Magnolia P. L.	2,700,000	5,500,00
Shell P. L.	3,000,000	4,661,353
Sinclair Prairie P. L.	4,800,000	7,290,610
Texas P. L.	2,500,000	6,505,000
Texas-New Mexico P. L.	2,400,000	not fixed
American Liberty P. L.	275,000	328,310
Pure Transportation	2,315,000	2,694,015
Republic P. L.	600,000	443,850
Sun P. L.	1,730,000	1,827,919
Texas-Empire P. L.	3,500,000	2,861,110
United Oil P. L.	140,000	150,000
Valley P. L.	not fixed	125,000
Yount-Lee P. L.	775,000	585,475
Atlas P. L.	not fixed	not fixed
Arkansas P. L.	665,000	782,700
Continental P. L.	not fixed	not fixed
Crude Oil P. L.	180,000	112,050
Empire P. L.	145,000	not fixed
Illinois P. L.	not fixed	not fixed
Pan American P. L.	900,000	575,000
Reagan Purchasing	15,000	45,000
Southern P. L.	150,000	not fixed
Standish P. L.	60,000	50,000
Stanolind P. L.	not fixed	not fixed
Tidal P. L.	875,000	1,035,295
Toronto P. L.	90,000	100,000
Duval P. L.	not fixed	not fixed
Barnsdall P. L.	25,000	not fixed
Total	$48,140,000	$54,714,669

Cheyenne to Denver line ready to start

Construction of the Cheyenne to Denver leg of Continental Oil Company's $2,000,000 pipe line linking the Lance Creek field of Wyoming to the company's Denver refinery was to start late last week, at which time pipe was to have been delivered at Cheyenne. About 20 miles of ditch south of Cheyenne had been dug for the pipe last week.

Illinois station is reopened

Following a shut-down of several weeks, the Montrose pumping station of the Illinois Pipe Line Company, located midway between Montrose and Teutopolis, Illinois, resumed operations last week. The shut-down was necessitated by changes in the line near Brownstown to accommodate crude from the Centralia and Sandoval fields. A 6-inch line from the fields to the Brownstown station has been completed.

El Paso natural gas system is planned

The City of El Paso, Texas, last week filed an application for a $2,000,000 loan and grant for construction of a natural gas distribution system with Public Works Administration officials at Fort Worth.

Mayor M. A. Harlan declared the city would soon make an offer to the Texas Cities Gas Company, subsidiary of the Lone Star Gas Company, for the company's distribution system. A reasonable offer must be made and rejected by the company before the PWA project can be approved.

BRUCE D. HOWATT of Wetaskiwin, Alberta, secretary and a director of Ram River Oils Ltd., was in Calgary last week. He reported excellent progress on construction of 4 miles of road through difficult brush country to the company's wildcat location on the Ram River anticline, 10 miles southwest of Phoenix, Alberta.

Market Situation

Mid-Continent gasoline postings drop and crude becomes unsteady as result of East Texas price cut, despite belief reductions will not spread

Markets unsettled by East Texas crude cut

Disturbed by the recent reduction of the East Texas crude price by several independent refiners, the oil industry's markets remain generally unsteady, although several indications point to an early restoration of stability.

The East Texas situation immediately affected not only the crude oil markets but also the markets for gasoline and other refined products, which already were hampered by excessive gasoline and fuel oil stocks.

And because of the pending state elections in Texas, the uncertain East Texas situation last week was being temporarily prolonged.

It was indicated, however, that Saturday shut-downs of fields, in addition to present Sunday closings, might be reinstated in the Texas proration order for September, which was expected to be promulgated immediately after the election.

It was felt, in that connection, that Saturday shutdowns would relieve the pressure on the East Texas crude market and permit the maintenance of the old price of $1.35 a barrel by the major purchasers.

Allowable Outlook Good

Also viewed hopefully were the prospects for continued strict crude production curtailment in September in Oklahoma and other leading producing states of the Mid-Continent.

Meanwhile, some encouragement has been given by the weekly statistics of the industry, which reveal continued moderate crude production and refinery runs, exceptionally low crude oil stocks, and steadily declining gasoline inventories.

However, information on petroleum demand is not particularly favorable. Consumption still shows the influence of the recession, and no perceptible improvement of demand has actually occurred, despite hopeful expectations.

Gasoline consumption has been somewhat disappointing, and the Bureau of Mines has estimated that it will not be quite as large in September, 1938, as in September, 1937. Demand for heavy fuel oil and lubricants continues to lag below last year's levels, because of sluggish industrial activity.

The gasoline market in the Mid-Continent refining districts was unsettled last week by the uncertainty over crude oil prices, and open market sales were light, although shipments against contracts were holding up well.

Some slight increase in light fuel oil shipments occurred in the Mid-Continent, and prices were generally steady. But demand for industrial fuels continued light.

East Texas Reduction

A few days after the 15-cent East Texas crude cut was initiated by East Texas Refining Company, it had been met by two additional independent refiners, Longview Gathering System and Premier Oil Refining Company. The three companies together had been buying about 13,500 barrels of crude daily. In making the reduction, effective August 20, East Texas Refining Company stated to suppliers that the cut was "an adjustment and an equalization to a price which this company can pay for East Texas oil," and that the new price was "in line with prices being paid by large purchasers of crude in other Texas fields and for oil being imported into Texas from Arkansas and Louisiana."

The old price of $1.35 a barrel for East Texas crude has been threatened for several months, and the reduction was not a surprise. Some East Texas oil had been going onto tankers at Gulf terminals at less than the regular f.o.b. ship prices for several months, indicating in effect that concessions were being made in the established prices at the wells. Meanwhile, some independent refiners of East Texas were turning away from East Texas crude to supplies of cheaper crude from North Louisiana and Arkansas fields.

In view of the circumstances, it is felt that the weak East Texas market is largely a local matter, and that the general Mid-Continent crude market would not be affected even by a general reduction in East Texas by all purchasers.

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
July, 31, 1937	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August 29	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 26	3,322,800	3,170,000	305,167,000	90,719,000	120,958,000
March 19	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 2	3,058,550	3,095,000	291,666,000	80,634,000	138,903,000
July 9	3,296,250	3,095,000	290,469,000	79,893,000	140,587,000
July 16	3,343,100	3,195,000	289,310,000	78,721,000	142,068,000
July 23	3,349,050	3,180,000	287,585,000	76,366,000	143,041,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 6	3,317,850	3,215,000	287,406,000	75,380,000	144,699,000
August 13	3,359,900	3,295,000	286,251,000	74,387,000	146,261,000
August 20, 1938	3,392,700	3,265,000	.....	72,709,000	147,180,000
August 21, 1937	3,729,350	3,415,000	†308,737,000	67,260,000	110,493,000
Change in past year...	—9%	—4.3%	—7.2%	+8.1%	+33.2%

*All time peak. †Stocks, August 14, 1937.

Oklahoma gas rates are reduced

Community Natural Gas Company rates charged in 23 Oklahoma cities and towns were ordered reduced by the state corporation commission last week. The action is designed to bring savings to customers estimated at $25,000 to $60,000 annually.

The company's sales in the following communities are affected: Achille, Caddo, Davidson, Davis, Durant, Frederick, Hastings, Hugo, Loco, Wynnewood, Marietta, Manitou, Maysville, Mountain Park, Paoli, Pauls Valley, Purcell, Waurika, Wayne, Ryan, Snyder, Sulphur and Tipton.

Changes made in crude and refined oil prices

Price changes in the industry within the past 10 days have included downward revisions of gasoline tank car prices in the Mid-Continent and a few minor alterations of kerosine and fuel oil prices, in addition to the reduction of 15 cents a barrel in the East Texas crude posting by several independent

MAINTENANCE

OF THE EQUIPMENT THAT MAKES YOUR CASTINGS

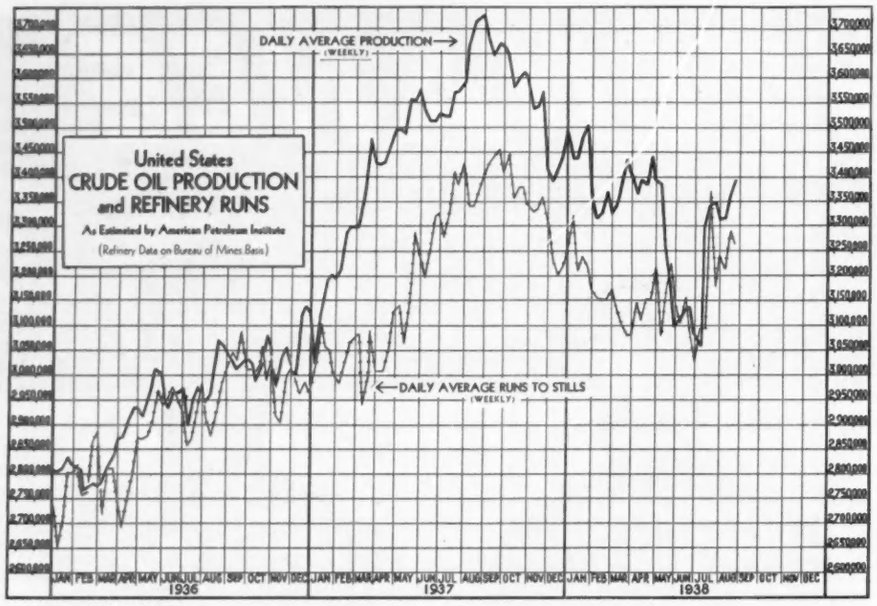
J. F. McTaggart (right) master mechanic in charge of maintenance has 25 years experience behind his job. P. E. McTaggart (top center) is his assistant, and O. L. Witcher (left) and L. M. Grizsby (right) are helpers.

The job of these four men is to keep the TESCO Foundry tuned up to highest efficiency . . . complete maintenance of all electrical and mechanical equipment, including furnaces, motors, temperature control equipment, cranes, grinders, sand blast, sand mills, sandslinger, air compressors and annealers. Their combined experience in maintenance work totals 51 years. Their job is an important one . . . and they're masters at it!

TEXAS ELECTRIC STEEL CASTING CO.

GOOD CASTINGS TESCO HOUSTON, TEXAS

TESCO STEEL IS GOOD STEEL!



refiners, from $1.35 to $1.20 a barrel.

Minimum quotations were marked down ⅛-cent a gallon on all grades of gasoline in the Oklahoma refinery market, and tank car prices in the Chicago territory were similarly lowered in some instances.

The lighter fuel oils have been quoted ⅛-cent a gallon higher in a few cases, while a concession of similar amount has been made by some sellers of kerosine in the Chicago market.

Natural Gasoline

Natural gasoline, grade 26-70, was priced generally in the Mid-Continent markets f.o.b. refineries at 3¼ cents a gallon, and sales were reported at the same price f.o.b. Breckenridge, Texas.

Gasoline at Refineries

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4⅝ to 5 cents a gallon; 63 to 66 octane, 4⅞ to 5⅛ cents; 67 to 69 octane, 5⅛ to 5½ cents; 70 to 72 octane, 5⅜ to 5¾ cents.

Corresponding prices in the Chicago markets were 4⅜ to 4⅞ cents, 4½ to 5⅛ cents, 4¾ to 5¼ cents, and 5 to 5⅝ cents.

In East Texas the most common gasoline, 60-62, 400 end point, was priced generally from 4½ to 4⅝ cents a gallon.

Kerosine prices f.o.b. Oklahoma refineries ranged from 4 to 4¼ cents a gallon for the 41-43 water white grade, and from 4⅜ to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3½ to 4¼ cents and 3⅝ to 4⅜ cents.

Fuel Oil

Fuel oil prices were not materially changed in the past week. In the Chicago market range oil was priced from 3⅝ to 4⅛ cents a gallon. The No. 1 white oil was priced from 3½ to 4 cents, and No. 1 straw from 3⅜ to 3¾ cents. No. 2 straw was 3⅛ to 3¾ cents. No. 3 oil was 3 to 3⅜ cents. No. 5 oils were 60 to 70 cents a barrel. The No. 6 oil was quoted at 40 to 50 cents a barrel.

Operations conservative and inventories decline

The latest weekly statistics of the oil industry revealed a continuation of comparatively low crude production and refinery runs, further substantial reductions of the stocks of both crude oil and gasoline, and another increase in fuel oil storage.

United States crude oil production in the week ended August 20, averaging 3,392,700 barrels daily, was about 30,000 barrels higher than in the previous week, although 9 percent lower than in the corresponding week last year.

Crude oil runs to refinery stills meanwhile were 30,000 barrels a day lower than in the preceding week and 4.3 percent lower than one year previously.

Crude oil stocks came down over a million barrels in the week ended August 13, dropping to 286,251,000 barrels, or almost to the 14-year low level that was touched in January, 1937. The crude stocks now are 7.2 percent lower than a year ago.

Gasoline stocks were reduced about 1,700,000 barrels in the week ended August 20, having declined to 72,709,000 barrels. They were then 8.1 percent above last year's trend, although gasoline demand is only about the same as last year.

Gas and fuel oil stocks were increased about a million barrels, or to 147,180,000 barrels in the week of August 20, and were then 33.2 percent larger than one year before, in the face of the fact fuel oil demand is lower this year than last year.

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields were shown on pages 48 and 49 of the August 1 issue. The complete schedule appears only in the first issue of each month.

Would fuel British ships with coal instead of oil

A movement has been launched in Great Britain, which is said to have the support of distinguished admirals of the Royal Navy and leading shipowners, to bring about the gradual displacement of imported fuel oil by domestic coal on ocean-going ships. Promoters of the campaign maintain Great Britain's existence has been menaced for several years by ever-increasing use of foreign oil at the expense of her own fuel.

"Total displacement of coal in the Royal Navy and in about half our mercantile has made our freedom of movement on the high seas dependent on the good will of those countries which export oil," declared a statement issued recently by the campaign committee.

The problem should be tackled primarily from the standpoint of national defense, the statement continued, adding that the coal industry as a whole has been misled by political remedies such as quotas, restrictions and central selling schemes.

"The enormous sums sent out of the country to buy oil would not be of such moment were we able to export an increasing quantity of manufactured goods," the statement adds. "But rising costs of labor and fuel are in a fair way to reducing our foreign trade to a minimum, and the adverse balance rises steadily each year.

Challenge federal power to intervene in city gas fight

The right of the federal power commission to intervene in a campaign of the City of Cleveland to gain lower natural gas rates was challenged last week by Hope Natural Gas Company. The company's attorneys told the commission that it could not determine the "reasonableness of rates in effect on June 30, 1937," before the Federal Gas Act was passed.

The appeal to the federal commission had been taken by the city, which seeks to enforce an ordinance cutting rates which was to have become effective on that date. Investigation of the contracts between the Hope company and East Ohio Gas Company, affiliates of Standard Oil Company of New Jersey, was sought.

Allowables

[*Continued on page 54*]

affected operators with back allowable, which can be made up when a market is available. Shell is currently accepting 90 percent of the allowable.

Kansas expected to cut September output

Nominations by purchasers of Kansas crude oil gave figures to indicate a demand for 154,946 barrels daily at the hearing in Wichita before the State Corporation Commission August 23. No formal order has been signed but indications that the total will be about 5000 barrels below the August allowable of 165,500 barrels daily.

Crude Production

Decrease of 9,050 barrels daily brings U. S. total to 3,376,425 barrels; biggest drop in California

THE week ended August 27 brought a reversal of the formerly rising trend of United States crude oil production, the output having been 9050 barrels a day lower than in the previous week in averaging 3,376,425 barrels daily.

At the new level, the production was 61,675 barrels a day lower than the indicated average daily market demand for domestic crude, as estimated by the Bureau of Mines for August. The output of the wells was, therefore, low enough apparently to permit additional withdrawals of oil from storage, as in other recent weeks.

In contrast with the 3,376,425 barrels actual daily production in the week ended August 27, the Bureau of Mines had estimated market demand for 3,438,100 barrels of domestic crude daily during August.

Primarily responsible for the decrease were declines in Oklahoma, Kansas, California, and the Pennsylvania grade fields. Texas, New Mexico, and Louisiana showed small increases, and Arkansas output was unchanged.

Oklahoma averaged 437,050 barrels daily, which was 6350 barrels less than in the previous week, and 92,650 barrels a day less than the estimated market demand for August, although 9050 barrels daily more than the state allowable.

Kansas output was down 2700 barrels from the previous week's level in averaging 165,375 barrels a day and conformed almost exactly with the state allowable, while it was about 4000 barrels under the Bureau of Mines estimate of demand.

California averaged 675,300 barrels daily, which was about 9000 barrels a day less than in the previous week, 25,000 more than the indicated market demand, and 60,000 more than the state allowable under the voluntary proration plan.

Texas production averaged 1,393,100 barrels daily, which was about 7000 barrels more than in the previous week, but still slightly under the state allowable, although 16,000 barrels a day more than the indicated market demand.

New Mexico averaged 107,100 barrels daily, 500 more than in the previous week and about the same as the state allowable, although 5000 barrels a day less than the market demand estimate.

Louisiana last week averaged 262,900 barrels daily, which was 6000 more than in the previous week and a like amount more than the state allowable and the indicated demand, which are about the same.

Arkansas production was unchanged at 56,200 barrels daily, which was a little less than the indicated demand.

Recession causes 12 percent drop in motor vehicle travel

The effect of the recession on sales and use of automotive products is clearly shown in the comparative statement of federal tax income from these sources during the month of June this year and last, the American Petroleum Industries Committee reports.

Only about one fourth as many automobiles and about one third as many trucks were sold this June as were sold in June of 1937, while the use of automobiles apparently dropped about 12 percent, judging from federal revenue obtained from gasoline and new-tire sales. The drop in federal revenue from all automotive products amounted to more than 28 percent.

United States Crude Oil Production

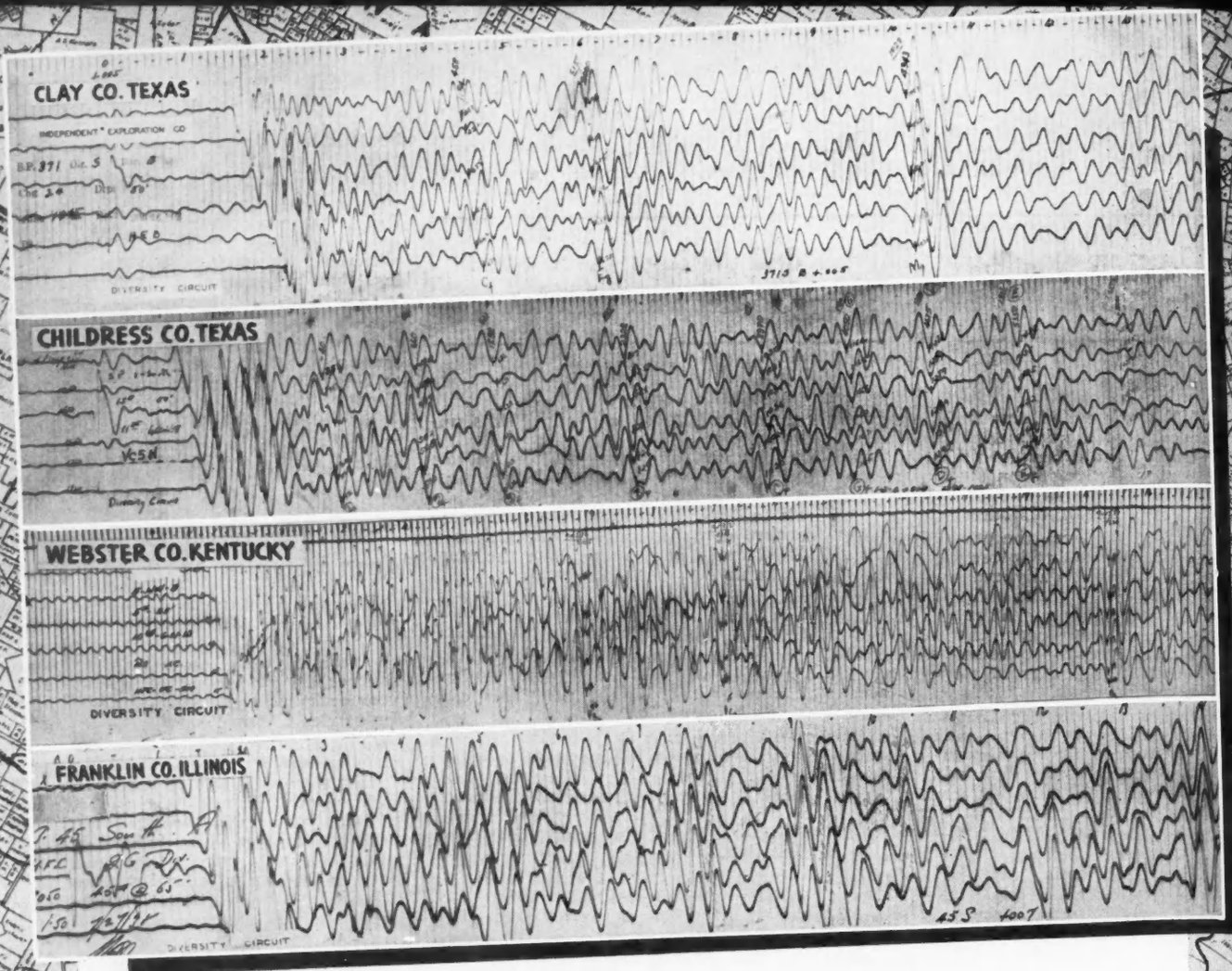
Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in August)	State Allowable in Aug.	BARRELS DAILY FOR WEEK ENDED Aug. 27	Aug. 20
TEXAS—				
Texas Panhandle	.....	.....	73,400	72,200
North Texas	.....	.....	75,100	76,600
West Central Texas	.....	.....	29,600	29,300
West Texas	.....	.....	220,200	218,800
East Central Texas	.....	.....	97,700	98,700
East Texas Field	.....	.....	440,900	439,200
South Texas	.....	.....	237,400	236,500
Texas Gulf Coast	.....	.....	218,800	215,100
Total Texas	1,377,800	1,394,269†	1,393,100	1,386,400
CALIFORNIA—				
Long Beach	.....	.....	56,000	57,000
Santa Fe Springs	.....	.....	31,700	32,800
Huntington Beach	.....	.....	30,700	33,400
Dominguez	.....	.....	25,600	26,000
Ventura Avenue	.....	.....	34,700	33,700
Midway-Sunset	.....	.....	65,400	64,200
Kettleman Hills	.....	.....	61,300	66,200
Wilmington	.....	.....	93,900	97,700
Others	.....	.....	276,000	273,000
Total California	649,300	615,000*	675,300	684,000
OKLAHOMA—				
Oklahoma City	.....	.....	96,775	123,250
Seminole Area	.....	.....	98,375	89,125
Fitts	.....	.....	40,725	39,250
Others	.....	.....	201,175	191,775
Total Oklahoma	529,700	428,000	437,050	443,400
LOUISIANA—				
North Louisiana	.....	.....	80,400	82,500
South Louisiana	.....	.....	182,500	174,400
Total Louisiana	256,100	256,715	262,900	256,900

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in August)	State Allowable in Aug.	BARRELS DAILY FOR WEEK ENDED Aug. 27	Aug. 20
KANSAS—				
Burrton-Haven	.....	.....	9,350	9,375
Russell County	.....	.....	26,300	26,025
Silica	.....	.....	10,900	12,350
Others	.....	.....	118,825	120,325
Total Kansas	169,300	165,500	165,375	168,075
NEW MEXICO	112,300	107,000	107,100	106,600
MICHIGAN	60,000	.....	49,200	49,500
ARKANSAS	53,900	.....	56,200	56,200
MOUNTAIN STATES—				
Wyoming	62,200	.....	62,800	61,600
Montana	13,900	.....	13,100	13,600
Colorado	5,500	.....	3,700	3,600
Total Mountain States	81,600	.....	79,600	78,800
EASTERN STATES—				
Pennsylvania Grade	.....	.....	70,200	75,600
Southern Illinois (New Pools)	.....	.....	47,800	45,800
Illinois-Indiana (Old Pools)	.....	.....	11,600	13,800
Others, Eastern	.....	.....	21,000	20,400
Total Eastern States	148,100	.....	150,600	155,600
Total United States	3,438,100	.....	3,376,425	3,385,475

† Daily average, considering Sunday shut-downs.

* Recommendation of Central Committee of California Oil Producers.



New INSTRUMENT Makes GOOD Seismograph Records in Areas Once Believed Impossible

Opening up new territories for seismic mapping, the new SOGAD Amplifier and Diversity Circuit enables us to obtain satisfactory records in areas where high velocity limestone, sandstone, gypsum, etc., have heretofore made accurate work extremely difficult or impossible.

Recently perfected, after several years of research, this new instrument greatly simplifies the correlation of records and aids in achieving results which broaden the useful field of the seismograph . . . it is, in our opinion, one of the most important seismograph improvements since 1930 when 4 traces were put on one record. Demonstration has proved the SOGAD Amplifier and Diversity Circuit may be relied upon to:

1) Filter out vibrations not produced by reflected energy and it is especially successful in elimination from the records low frequency surface disturbances or "ground roll."

2) Reduce the depth necessary to drill shot holes. In several areas the shot hole depth was reduced from 150 feet to 50 feet.

3) Accentuate and increase the record character, making for more simplified correlation.

4) Give a record that shows reflections starting at .35 second and continuing to the deepest beds being surveyed, without reducing the amplitude of the first breaks.

The performance of SOGAD Amplifier and the Diversity Circuity is best illustrated by the records themselves. The records on this page are from Clay County, Texas, and Childress County, Texas (gypsum outcrop); Webster County, Kentucky (limestone outcrop); and Franklin County, Illinois. For further information send for our illustrated booklet, *Seismograph Exploration in the Search for Oil.*

INDEPENDENT EXPLORATION COMPANY

ESPERSON BUILDING — HOUSTON TEXAS

POINTING THE WAY — FOR THE [illegible]

WEEK'S DRILLING HIGHLIGHTS

South Texas

SOUTH TEXAS was the world's hot spot during the week. A new Heterostegina, or Greta, sand pool was opened south of Vanderbilt in Jackson County; Jim Wells County recorded for Alice field a 2-mile southwest extension which opened a new 4700-foot sand and another well which afforded a ¾-mile south extension in Vicksburg sand, to say nothing of a wildcat 16 miles north of the field which tried to blow out.

La Rosa field was extended 7600 feet southeast in Refugio County, and McMullen County was about to open a new field in Mirando sand at 1213 feet.

Illinois

Lake Centralia field, Marion County, was extended 1¾ miles northwest by a Benoist sand test. McClosky sand contributed northwest and south extensions to North Olney field. A Wayne County wildcat was testing 8 feet of McClosky saturation, and St. Elmo field recorded a ½-mile Stein sand extension.

South Louisiana

Salt water intrusion made it necessary to kill the well which last week converted Bancroft from a gas to an oil field. A well is swabbing oil and gas from a new sand at Darrow dome. Preparations are being made to test a new sand in a Gibson field outpost. The second Oligocene well completed on the southwest flank of Hackberry was better than the first.

Michigan

Two new sections were opened for oil development in the western part of the state by discovery strikes. One is in Van Buren County, the other in Allegan County.

Comparison of Permits Granted for New Wells

STATE	Week Ending Aug. 27	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	6	16	165	159	240
California	12	38	808	1,054	1,584
Louisiana	21	39	884	827	1,227
Kansas	22	134	1,042	1,831	2,663
Michigan	18	83	536	660	958
Oklahoma	42	141	1,351	1,960	2,711
Texas	257	908	8,833	12,102	17,238
Total	378	1,449	13,619	18,593	26,621

Texas Gulf Coast

Rattlesnake Mound, Brazoria County, was temporarily thrown into the discard by too much salt water. Some of the gap between Fairbanks and Satsuma, Harris County, appears to be filled by a well showing for production. In the same county, an outpost of Eureka field flowed 20 barrels an hour on choke.

Oklahoma-Kansas

Recent wildcat strikes in Greater Seminole area, Oklahoma, were entered as completions. One new pool was indicated last week in a Stafford County wildcat of western Kansas, where in six instances there were indications of new sands and extensions, all in the western part of the state.

North Texas

Deep lime prospecting in four counties contributed that many disappointments, and the Burkburnett area's search for deep lime production failed also.

West Texas

Slaughter field of Hockley County was extended east and northeast. Pecos County's most expensive wildcat was chalked up as a failure, but a semi-wildcat in northeastern Crane County flowed 150 barrels of oil from 3350 feet before being killed by a nitro shot.

Arkansas

Productive limits of Schuler field, Union County, apparently were defined last week with respect to Lower Marine and Permian productive horizons.

North Louisiana

Lisbon field, Claiborne Parish, was extended ½ mile southwest by a well flowing 15 barrels hourly from 5362 feet.

New Mexico

Vacuum field has a major extension in prospect, a wildcat awaiting a production test at 4610 feet. Development of production between Eunice and Penrose sandy lime areas attracted new activity.

Canada

Turner Valley, currently the most talked of field in the British Empire, was extended southwest by an important producer and has other wells in Madison limestone, the producing formation of the field, that may render it the most important source of crude oil for old England before the close of the year.

Summary of Wells Completed in the United States Week Ending August 27, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1938	Total this Date 1937
Alabama	....	....	....	....	.....	2	1
Arkansas	4	2	....	2	1,145	151	69
California	34	26	....	8	21,993	837	1,005
Colorado	....	....	....	....	.....	5	8
Florida	....	....	....	....	.....	....	1
Georgia	....	....	....	....	.....	1	.....
Illinois	32	24	....	8	4,840	890	113
Indiana	....	....	....	....	.....	79	84
Kansas	25	19	1	5	23,310	1,129	1,732
Kentucky	15	10	1	4	372	499	237
Louisiana	12	10	....	2	3,716	724	609
Michigan	25	15	....	10	5,665	571	604
Mississippi	....	....	....	....	.....	11	10
Montana	....	....	....	....	.....	44	124
Nebraska	....	....	....	....	.....	1	.....
New Mexico	14	10	1	3	4,358	353	473
New York	*8	8	....	....	20	*465	*817
Ohio	21	7	6	8	175	622	985
Oklahoma	21	13	2	6	967	1,449	2,111
Pennsylvania	*36	33	1	2	34	*1,442	*1,988
Tennessee	....	....	....	....	.....	2	.....
Texas	226	176	4	46	188,629	8,604	9,990
Utah	....	....	....	....	.....	2	.....
West Virginia	12	4	6	2	36	457	600
Wyoming	1	1	....	....	45	74	72
Total this week	486	358	22	106	255,305	18,414	21,633
Total last week	602	421	39	142	316,162	....	.....
Total this year	18,414	12,767	1,311	4,336	12,447,066	....	.....

* Includes water-intake and pressure wells.

Oklahoma Fields

Two Greater Seminole area wildcats make oil producers.
Oklahoma County wildcat drilling deeper after oil show.
Pottawatomie County wildcat producing from Viola lime.

Tulsa.—Oklahoma got two of its recent wildcat strikes into the completion list last week. Both are in the Greater Seminole area. Atlantic Refining Company is flowing McCurry 1, NW NE SW 6-6n-4e, Pottawatomie County, at 250 barrels daily from Viola lime, 4188 to 4210 feet, until its discovery right of 15,000 barrels has been taken. In Seminole County standard rig is being built to produce by pumping in the test drilled by Young and Newsome and sold to J. F. Smith and Commercial Drilling Company, Edgeman 1, SEc 17-7n-6e. Three offset tests are rigging up around this well. One is starting west of the McMurray well.

The Oklahoma County wildcat, south of Britton, continued to drill deeper in the Second Wilcox sand, which began showing water between 6774 and 6776 feet. First efforts to shut off water with a cement plug were not successful, so another plug has been set and the test will wait several days to resume testing. The well flowed from 10 to 15 barrels an hour in its several tests while drilling deeper. Indications are that it has opened a small pool between the Britton and Oklahoma City fields.

On the score of initial output Oklahoma field activity sank to a low level last week, as its 13 oil wells had combined initial output of only 967 barrels. New work reflected the tendency to confine activity to areas that promise production, with the Greater Seminole area drawing 15 of the 42 locations.

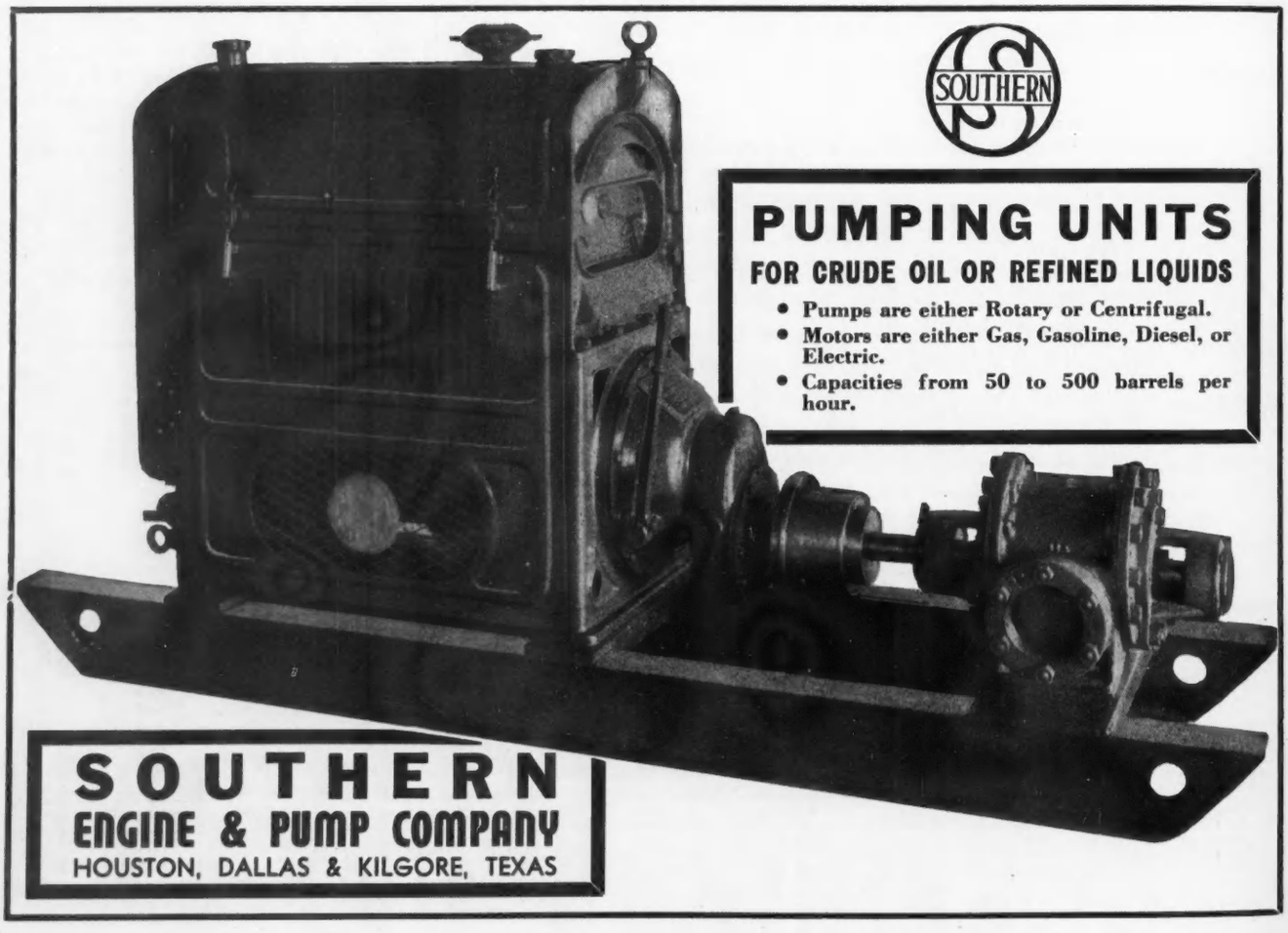
Final completion of the Oklahoma County wildcat south of Britton, Vanek 1, SE SW NE 4-12n-3w, by Olson Oil Company and associates will be made after a successful shut off of water found in the last two feet of Second Wilcox sand. The flow of oil, which reached 15 barrels an hour, began cutting in the last 2 feet drilled between 6774 and 6476 feet. Last week the well began showing for 10 barrels an hour, total depth 6766 feet, top 6721 feet, with 7-inch casing set at 6717 feet. The well was drilled deeper by going 2 feet each time and permitting the well to flow for 3 hours after each deepening. After water appeared, a cement plug was set but this apparently failed to hold as the well continued to cut about 4 percent water and a small amount of basic sediment. Cutting was similar to the amount before setting the plug. Another plug was pumped in the latter part of last week and this will be allowed to set several days before further testing. As the well drilled deeper gas increased and was estimated at 4,200,000 cubic feet daily on its last tests.

Development thus far indicates small output and previous drilling indicates comparatively small area. Nearest dry holes were drilled by The Texas Company, Reed 1, NEc 4-12-3w, a half-mile northeast, and I. A. O'Shaughnessy's Berlowitz 1, SW SE 9-12n-3w, a half mile south. Both were dry in the Wilcox sand.

The wildcat southwest of the Oklahoma City field, Little 1, drilled by Fain Drilling Company and associates, SW SW NE 28-11n-3w, continues to show salt water from the Second Wilcox sand, total depth 7006 feet. This test had the dolomite as its first objective; this failed to show saturation so the hole was carried to the Second Wilcox sand, which had saturated cores, but was found 300 feet lower than in the field proper.

Two north outpost wells in the Lucien pool, Noble County, are in the sand with showings to indicate producers. Guthrie 2 of Sinclair Prairie Oil Company, NW SW SE 31-21n-2w, had top of the First Wilcox sand at 5375 feet and began coring with each recovery showing saturation. Shell Petroleum Corporation in Guthrie 2, SE SE SW 31-21n-2w, set 7-inch casing at the top of the First Wilcox sand, 5405 feet.

Final completion of the Pottawatomie County wildcat, McCurry 1, NW NE SW 6-6n-4e, by The Atlantic Refining Company established the Viola lime as source of a flowing well between 4188 and 4210 feet. The well has been choked to 250 bar-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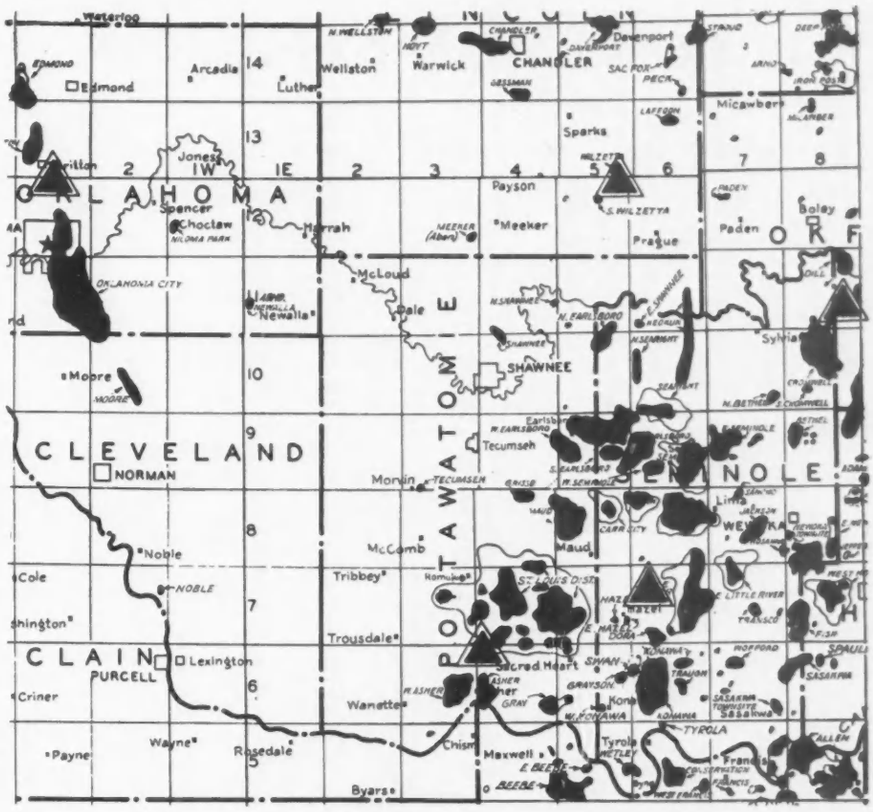
Five spots, indicated by triangles, have within the month given Oklahoma spots for modest drilling campaigns. In some of these wildcat discoveries are not yet completed. In each instance, however, showings are sufficient to justity more wells.

The wildcat between Britton and the Oklahoma City pool is being deepened and output increasing slowly. Last week it began making 10 barrels an hour from second Wilcox sand between 6721 and 6766 feet. When it had reached 6772 feet the flow increased to 15 barrels an hour. Plans are to deepen to the base of the sand or until salt water is encountered. The well, Vanek 1, SE SW NE 4-12n-3w, was drilled by Olson Oil Company and associates.

North of the Asher pool Atlantic Refining Company has Viola lime production in McCurry 1, NW NE SW 6-6n-4e, which flowed after acid treatment between 4188 and 4209½ feet. The company is starting two offsets. Original object of the test was the Wilcox sand.

Three other wells are starting around the discovery well west of Little River, Edgeman 1, SEc 17-7n-6e, which is being put on the pump to produce from the second Wilcox sand between 4378 and 4382 feet.

The Hunton lime extension south of Wilzetta, Bailey 1, NW NW NE 2-2n-5e, will be put on the pump. After completion between 4233 and 4239 feet, the well cleaned itself and flowed. An interest in this well has been bought by



From base map of E. C. Jacobson, Tulsa, Oklahoma.

lime Wilzetta pool, a half-mile north, is scheduled to start soon.

C. L. McMahon, Tulsa. Additional drilling between the well and the Hunton

There is a possibility of further drilling around the wildcat of C. W. Titus, whose Lehmer 1, C NE NE 26-11n-8e, flowed from the Cromwell sand between 3476 and 3481 feet. When it was deepened 4 feet, it began making water and has been testing since. An offset location was made after the first flow but work has been suspended to await developments.

In addition to these drilling spots, there are four wells active around the discovery south of the Braman pool, Kay County, where Helmerich & Payne completed a second Wilcox sand producer.

OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo—		
Olsen, Royce 1A, c n½ nw nw ne 12-5n-9w	¶3.5	6997
Carter—		
Shell, Hornton 22, nw ne nw se 6-4s-3w (pb 1256 ft)	11	1261
Magnolia, Thompson 5, nec nw 9-4s-3w	10	1052
Creek—		
Comail, Barnes 1, sec 18-17n-8e	*	2491
Gled, Escoe 7, nw sw se se 27-18n-8e	65	2636
Johnson, Wright 1, c w½ e½ ne ne sw 25-18n-9e	*	3493
Kay—		
Helmerich, School Land 1, sw se sw 16-28n-1w	110	3645
Lincoln—		
Jones, May 3, sec 10-14n-6e	37	3001
Wilcox, Fitch 3, se nw ne 15-14n-6e	40	3011
Okfuskee—		
Prince, Barnett 4, c ne se 35-11n-11e	*	1727
Okmulgee—		
Breacht, Sharp 5, sec nw 16-14n-14e	5	1215
Osage—		
Mason 7, se sw ne se 3-24n-12e	*	1611
I. T. I. O., 216, nw sw se 8-26n-11e (pb 1960 ft)	¶¾	2190
Pawnee—		
Grieves, Armstrong 1, ne sw ne sw 34-20n-7e (input well)	*	3582
Pontotoc—		
Sinclair, McCarty 2, sw nw ne 22-2n-7e (pb 1170 ft)	50	3915
Delaney, Horn 3A, sw nw nw 23-2n-7e	48	1346
Pottawatomie—		
Smith, Hines 3, sec ne 21-7n-4e	90	3184
Miller 1, nwc sw 22-7n-4e	176	3240
Westheimer, McGee 4, swc ne 23-7n-4e (pb 3478 ft)	35	4236
Alma, Curley 3, nw sw nw 33-7n-5e	290	4041
Seminole—		
Magnolia's Carbitcher 2, se ne sw 14-9n-5e	*	4230
Gulf, Butler 2, sw ne ne 35-9n-6e (pb 2200 ft)	*	4075

*Failures; †Junked; ¶Million cu. ft. gas

rels daily through tubing and will produce at that rate until its discovery output of 15,000 barrels has been produced. The company is rigging Harris 1, NE NW SW 6-6n-4e, a west offset to the producer.

Preliminary pumping tests were sufficient to justify building standard rig for the Seminole County wildcat discovery, Edgeman 1, SEc 17-7n-6e, 2 miles west of the Little River pool, which is producing from the Wilcox sand between 4378 and 4380 feet. This well has been bought from Young & Newsome, along with the surrounding 80 acres by J. F. Smith and Commercial Drilling Company. Three offsets are rigging up.

Payne County Cores Encouraging

First cores from the Wilcox sand in the Payne County wildcat of Denver Producing & Refining Company, Horton 1, NE NW NE 22-19n-1e, were not encouraging. Top of the Wilcox sand was found at 4954 feet and cores were taken to 4964 feet with no saturation indicated. The test is between the Orland pool and the new Ramsey field, both in Payne County.

Markers encountered above the Wilcox sand in the three wells drilling in the Ramsey field indicate that they will make producing wells. These would give the field 13 wells, all on the commuity block, which is being operated by Mid-Continent Petroleum Corporation.

The Coal County deep wildcat test in the Centrahoma area, Mote 1, being drilled by Carter Oil Company, C E½ SW NW 19-2n-9e, is now in the Hunton lime and drilling below 6200 feet. The test is between the small Centrahoma field and the strike at Citra, which made small production but is not being produced.

Two of the deep tests in the Fox-Milroy area of Carter and Stephens counties are still in the Oolitic lime but have failed to get production.

Lester 1, drilling by Carter Oil Company and Gulf Oil Corporation, C NW NW 35-2s-3w, will be drilled deeper. It has been acid treated at 8055 feet in an effort made to get production by introduction of high pressure gas through tubing. On this test a packer set at 8025 feet failed to hold and oil was circulated through casing. It had one small recovery of 25 barrels.

Feagin 1, drilled by Carter Oil Company, C NW SW 36-2s-3w, is ready for acid at 8040 feet. This test is at 8040 feet with casing milled out. When pipe was being set it parted near the top and allowed the string to settle before cement had set. This necessitated shooting the lower part of the string and milling to condition the hole.

Kansas Field Developments

Western area fields get numerous production extensions.

Stafford County wildcat has oil in hole from Arbuckle.

Wichita.—Extensions to fields of the west were the prevailing trend in Kansas development last week. Burrton, Harvey County; Latta, Cowley County; Habiger, Rice County; Zenith, Stafford County; Schroeder, Ellsworth County, plus a third producing formation for Blue Hill, Ellis County, made up the list of successes by which older fields were enlarged in reserves.

Promise of one new pool is held in the showing in Stafford County, where 1800 feet of oil is in the hole from 3575 feet in Arbuckle lime. The other Stafford County wildcat had a second gas showing in the Lansing lime and will be acid treated.

On all scores except initial output, results of drilling hit a low point in Kansas last week. The state had but 27 completions and only 22 wells were started. But 19 of the completions added 23,310 barrels to the potential total.

Oil rose 1800 feet in the wildcat test of R. J. Rowley and associates, Sittner 1, SE NE 35-21-12w, Stafford County. The oil is from the Arbuckle lime at 3575 feet. The well may be acid treated before getting further tests. Top of the Arbuckle was 3565 feet and casing was set 1 foot deeper.

This well is 2 miles east of the Sittner pool proper and 1½ miles north of the Sittner south pool. It was drilled on acreage assembled by Indian Territory Illuminating Oil Company. Completion as a producer will give Western Kansas its thirty-sixth pool for 1938.

Further encouragement came from deeper drilling by Atlantic Refining Company whose Wise 1, NWc 13-24-14w, in the St. John area of Stafford County, had its second showing of gas, this time at 3822 feet, still in the Lansing lime, where it will be acid treated. Last week this well began making gas and a small amount of oil from the Lansing lime at 3729 feet. It was acid treated and the gas volume went to 6,000,000 cubic feet but the amount of oil was not sufficient to try for a completion. Instead 7-inch casing was set at 3787 feet and drilling continued until the deeper gas showing came. The well is west of the small St. John pool and north of the small Jordon pool. Distance from other production makes it desirable to test to the Arbuckle lime, source of most of the oil in Western Kansas.

In Cowley County, an older area which is drawing considerable work in seeking extensions, Leo Wentworth moved production a half mile to the west in the Latta pool. His Latta 1 NE SE NE 8-30-2w, had initial estimated at 100 barrels daily from the Kansas City lime at 3089 feet.

A half-mile extension to the south for the new Habiger area, Rice County, came with completion for 570 barrels initial in Habiger 1, NEc 6-18-10w, drilled by Atlantic Refining Company. Top of the lime was 3258 feet and total depth 3258 feet. Production followed acid treatment with 3000 gallons.

Promise of a half-mile extension for the Schroeder pool, Ellsworth County, was held in the showing of Mollhagen 1, C W¼ W¼ SE 29-17-9w, in which the oil column rose 3000 feet from the Arbuckle lime, total depth 3209 feet. The well is a half-mile south of previous field limits.

A third producing formation for the small Blue Hill pool, Ellis County, was established by production of 225 barrels from the Simpson sand in Oswald 1, SW NW NE 11-12-16w, a test completed by Courtney B. Davis. This field previously had but five wells, three producing from the Lansing lime member and two from the Arbuckle lime.

While the extension promised for the Zenith pool, Stafford County, was of minor area, completion of Zenith Community 1, SEc 14-24-11w, by J. R. Robertson, will bring the drilling campaign into the town of Zenith. His well had sufficient showing from the Misener sand to justify setting casing at 3793 feet. Robertson has other leases in the south part of the town but has most of these organized into community blocks to prevent town-lot drilling. The indicated extension is only three locations north of recent large producers in the field proper.

Completion of a small Lansing lime producer a half mile south of old production revived interest in the Kruse pool, northern Rooks County. J. J. Hall had initial of 170 barrels from the Lansing lime, total depth 3126 feet, in Kruse 1, SE SE NE 3-10-16w. Production was first discovered here in 1928 when Derby Oil Company completed Kruse 1, NW NW NE 3-10-16w, for only small production from the Lansing lime at 3167 feet. The well was abandoned a year later when a fishing job developed while drilling deeper.

A quarter of a mile from production in the Ainsworth pool, Russell County, Bruce Oil, Incorporated, had saturation in the Arbuckle lime, between 3392 and 3397 feet and will set casing to test Linsner 2, C W½ SE 3-17-13w.

A short extension for the old Burrton pool, Harvey County, came with initial output of 1500 barrels after acid treatment in the Mississippi lime at 3368 feet in a test drilled by George Hipple's Martindell 1, C N½ SE 18-23-3w.

After deepening a foot to 4611 feet, Grant 1-C, NEc 18-31-13w, Barber County, pumped 60 barrels in 5 hours from Arbuckle lime. This well is a half-mile southeast of the single Viola lime producer in the Lake City pool. Efforts have been under way for several months to convert it into a commercial producer. First output was from the Wilcox sand but volume was not sufficient to justify a test of the Arbuckle lime.

Favorable wildcat acreage continued to draw rigs in Western Kansas. Among the tests started are:

Champlin Refining Company's Elliott 1, SW NE 26-27-14e, Pratt County, where tools are being moved in;

A Graham County test by Duwe and Farris' Parker 1, C SE SW 29-6-23w;

One for North County by Power Oil Company and Olson Drilling Company's Noel 1, C Ep NE 12-4-21w, on a block of 5000 acres assembled by Indian Territory Illuminating Oil Company.

Wildcats abandoned during the week were:

Phil-Han Oil Company's Kaufman 1, SE SE NW 10-15-12w, Russell County, which had water in the Arbuckle lime between 3192 and 3194 feet; Hinkle et al's Drug 1, NE NE SE 13-15-14w, Russell County, after water showed from the Arbuckle lime between 3370 and 3373 feet.

KANSAS

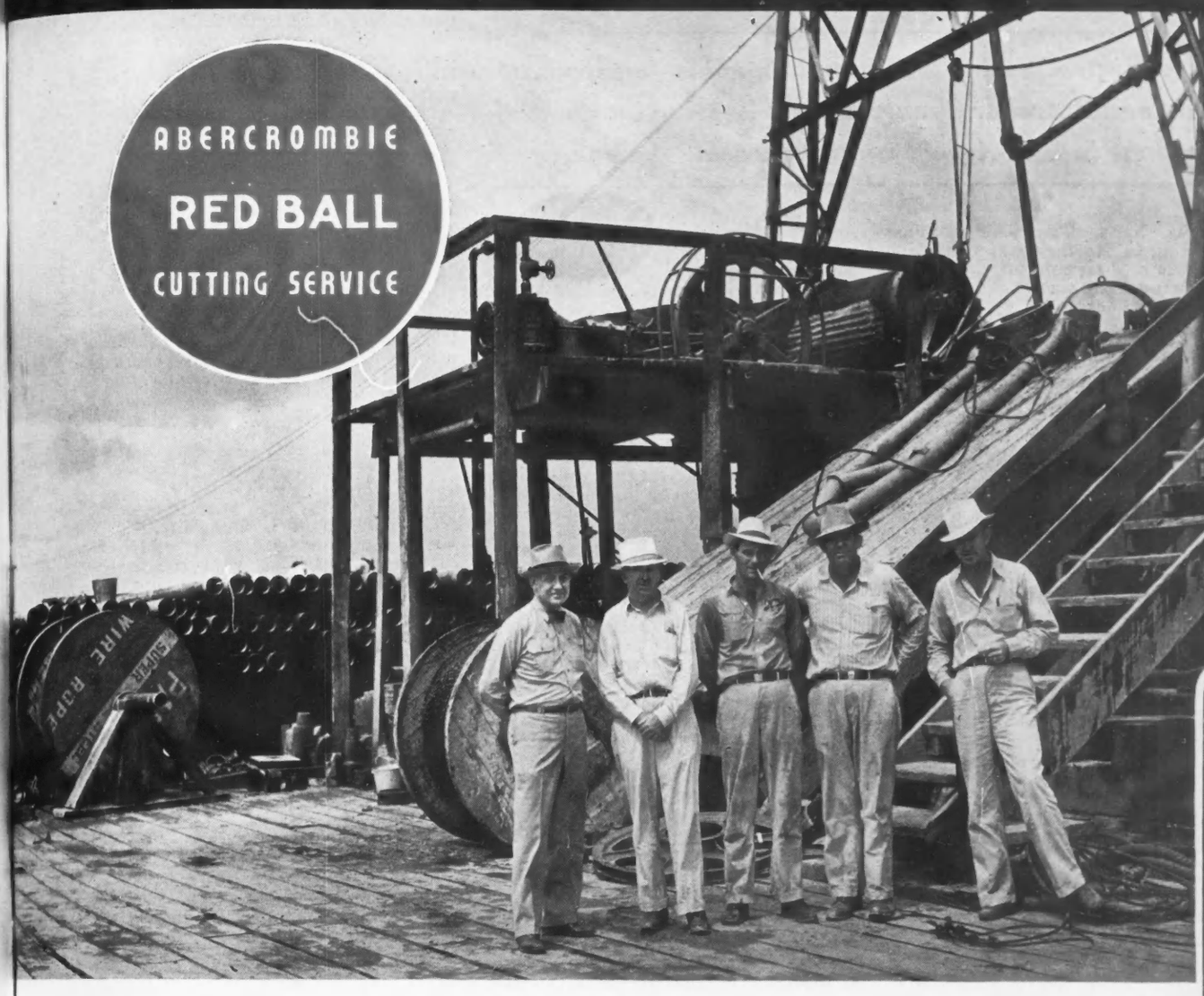
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Shell, Ehrlich A2, c e½ e½ nw 18-16s-13w	456	3389
C. L. Price, Stumps 1, swc se 3-17s-12w (pb 3324½ ft)	246	3325
Western, Gage 1, c e½ w½ nw 2-17s-13w	1804	3326
Magnolia, Muller 3, nw ne ne 1-18s-11w	2173	3247
Butler—		
Polhamus, Semisch 8, nw ne ne 5-28s-7e (pb 2759 ft)	15	2775
Republic, Burnham ?, sw nw nw 11-28s-7e	*	3232
Ellis—		
Dickey, Stein 1, nwc se 7-11s-17w	1811	3448
Grant—		
Columbian, Baughman 1, c sw nw 28-28s-36w	¶19	2710
McPherson—		
Williams, Lewis 1, csl sw nw se 30-19s-1w	418	2962
H. & M. Wiggers 1, c ne ne 36-19s-2w	555	2978
Continental, Meyer 2, se sec 19-21s-1w	*	3460
Osage—		
Edwards, Detrich 1, c nw se 21-14s-15e (otd 800 ft)	*	1130
Rice—		
Shell, Zajic 4, ne nw ne 13-18s-8w	2662	3224
Cities, Frees 1 nw sw se ne 20-18s-9w	*	3299
Cali-Kans, Fair 1, cwl e½ e½ 4-22s-8w	*	3775
Russell—		
Louck's Miller 2, se sw nw 29-13s-14w	657	3303
Aylward, Holl 2, c n½ n½ sw 22-14s-14w	1262	3062
Wolf, Witt 1, ne se sw 10-14s-15w	2410	3266
Central, Kuhnle 1, nec sw 4-15s-12w	551	3067
Southern, Boomhaur "A" 14, nw ne ne 30-15s-13w	350	3261
Sedgwick—		
Prunty, Lenner 1, nw ne se 17-25s-1e	1819	3339
Stafford—		
Cities, Smith "B" 1, c w½ w½ sw 16-21s-11w	412	3409
Torry, Ziegenbusch 1, sec 28-21s-12w (pb 3618 ft)	15	3631
Stanolind, Fuller 2, nec sw 11-24s-11w	1583	3750
Moore, Johnson 2, swc 13-24s-11w	4111	3814

*Failures; †Junked; ¶Million cu. ft. gas

Muskogee.—Sale of 80 oil leases on 80 tracts of lands of members of the Five Civilized Tribes will be held through auction here September 6. The tracts are in Rogers, Tulsa, Creek, Wagoner, Okmulgee, Okfuskee, Coal, Hughes, Seminole, Pontotoc, Jurray, McClain, Grady, Jefferson and Love counties.

We Cut Them out of Trouble!



The well: Pan American-Barnsdall's Community B-2. The men (left to right) E. R. Turner, general manager, and Ira Walker, district Superintendent, Pan American; C. P. Necessary and Clyde Long, tool pushers; and Bob Prentice, Abercrombie RED BALL Cutting Service.

We got a tough one when we were called on this Valentine, Louisiana, job . . . 4½" drill pipe stuck "tighter'n a drum" from 2353 feet to 9045 feet.

Bob Prentice, RED BALL Cutting Service Operator stationed at Houma, Louisiana, washed over and made 20 cuts (note depths at right) averaging 334 feet per cut, or a total of 6692 feet . . . and had the hole cleaned to bottom in 27 days. It's an example of the many holes saved for successful completion regularly by this proven cutting service, despite the handicaps of today's extreme depths.

DEPTHS OF THE 20 CUTS:

2353'	6982'
2949'	7288'
3590'	7561'
3651'	7773'
4261'	7986'
4812'	8158'
5238'	8404'
5728'	8618'
6214'	8829'
6643'	9045'

Abercrombie Outside Cutter, shown at right, feeds the knives smoothly into the cut automatically by screw feed propelled by rotation of the tool, preventing gouging. There is no upward strain on the cutters.

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THERE'S A RED BALL OPERATOR NEAR YOU

North Texas Development

Deep Lime prospecting is disappointment in four counties
North Central Archer County wildcat location announced.
Operations in K-M-A field continue weekly decline.

Wichita Falls, Texas.—Deep lime prospecting in North Texas contributed a series of disappointments the past week when drilling was halted on closely followed wildcats in Clay, Childress, Wilbarger and Throckmorton counties. A more favorable outlook for a revival of commercial prduction from a wildcat in southeastern Wichita County occurred when deepening operations uncovered additional oil-saturated lime in the lower Bend series.

Continental Oil Company and Petroleum Producers Company's State Asylum 1, southeastern Wichita County test, was carrying hole full of oil while drilling hard lime at 5403 feet. New oil pay was logged at 5129-44 feet and 5366-82 feet. It was originally completed last July in Bend at 5079-5128 feet with a maximum yield of 388 barrels of oil in 18 hours after acidizing, and quit flowing after producing 1184 barrels oil in 8 days. Owners plan to test the Ellenberger.

Walter H. Gant et al's B. Edwards 1, Clay County's deepest test and 6 miles east of Henrietta, shut down in the Ordovician horizon at 6364 feet. It is scheduled to plug back and perforate 7-inch pipe opposite oil show passed up in Marble Falls lime at 5792-5830 feet.

The Kirkland area, southeastern Childress County, recorded its second recent failure when W. A. Aggers and J. P. Stewart's Schluter-Loter 1, 1 mile north of the town, quit in hard lime at 6007 feet. No shows were recorded.

Protection string of 9⅝-inch pipe has been cemented at 5198 feet to deepen Sinclair Prairie Oil Company's S. H. Putnam 1, northwest outpost for the Walnut Bend pool, northeastern Cooke County, to the 7000-foot level in search of production in the Ellenberger. This test failed to produce in the Deese (Strawn), which yielded a natural flow for the company's discovery well, and a lower sand, carrying oil saturation at 5150-57 feet, tested salt water.

Target Drilling Company's W. T. Waggoner 1, NE SW NE H&TC Section 27, Block 6, southeastern Wilbarger County, passed up oil saturation in Strawn at 4183-4200 feet and 4210-25 feet, and is idle at 4417 feet in hard lime. It may be deepened to the Ellenberger, then if no production is developed the hole is slated to be plugged back for a test of the Strawn.

Archer County Wildcat

North Central Archer County has been allocated a new wildcat project. Sinclair Prairie Oil Company made location for Hood 1, NEc Section 18, ATNC Lands, 1¾ miles west of the Panther deep area, and ½ mile east by south of a recent Strawn failure that showed oil. The company holds lease on 800 acres around the test, which will be under way by mid-September.

Panhandle Refining Company et al's Prideaux 1, deep test for the southeast corner of Archer County and near the county's oldest shallow pools, logged top of the Caddo lime at 4572 feet, and was drilling in hard lime. Rancho Oil Company and Fresno Oil Company each hold one-third interest in the test and the deep rights on 1500 acres. Owners plan to plug back and test shows passed up near the 3300-foot level when their 4750-foot depth contract is completed.

Another deep lime failure for the Burkburnett shallow district was indicated the past week when Magnolia Petroleum Company's Hugh Reilly 143, J. Ellis Survey A-75, 3½ miles southeast of Clara, entered the Ellenberger at 2440 feet, and no shows were reported in drilling to 2490 feet. Top of Ellenberger is 559 feet higher structurally than the same company's Chris Schmoker 43, located 1¾ miles to northeast. The latter logged the lime at 3010-3666 feet, and was abandoned late in June.

K-M-A Work Declining

Total operations in the K-M-A deep field continue to decline as result of the weekly volume of completions being greater than the new locations. Operators are generally restricting their field activity to necessary offsets that have piled up since the launching of an aggressive drilling program late last year. Royalty owners are not in harmony with the curtailment, and are exerting pressure on lessors to continue developments regardless of the proration allowable per well.

Current field report lists 150 operations, including 11 new tests started the past week. The volume of completions is due to drop sharply in September as the number of tests in process of completion and awaiting proration gauge declined to 46, and only 25 tests are drilling with rotary between casing points. Surface pipe has been landed for 18 additional projects. Derricks and rigs account for 15 listings. There are 3 tests on the inactive list, and the remaining 43 operations are classed as authorized locations.

Moran Bros. Inc.'s T. L. Burnett 1, SWc of 1348-acre tract, Jas. A. Bradford Survey A-27, added another failure to the northeast flank of the K-M-A area. No saturation was logged in drilling to 4290 feet. Hanlon & Buchanan Inc. has completed several small flowing wells a short distance southwest of this dry hole.

Jones, Stasney et al's Brockman 1, southwestern Throckmorton County wildcat, in process of completion since mid-July, flowed 196 barrels of oil in 3 hours after using 3000 gallons of acid in sandy lime at 4699-4716 feet, and on the following day was making mostly salt water. Owners are attempting to locate the source of the water.

NORTH TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County—		
Fain-McGaha, Wilson-McCrory 1, sec 44	280	4760
Shappell Oil Co., Bell 7, sec 27	136	1022
Bell 8, sec 27	124	1010
Knox County—		
R. N. Hamilton-W. C. Gouchie, Burnett 1, sec 69	*	2040
Clay County—		
Jo-Ellen Oil Co., Big Wichita River 1	262	1105
Cooke County—		
Texas Co., Kessler 4, blk 4	20	1340
Jack County—		
Cockburn Oil Co., Mantooth 4	241	3235
Hill & Hill, Jones 2	140	3100
Madden et al, Mask 2, sec 2708	*	2288
Pruitt et al, Covington 6	10	345
Rogers et al, Shown 3, blk 1	*	602
Montague County—		
Seitz-Comegys & Seitz, King 7	128	1745
Wichita County (K-M-A)—		
Bridwell Oil Co., Bridwell 2	576	3904
Pace 5	680	3813
British-American, Martin 1, lse 2, sec 12	300	3860
Browning et al, Lewis 3-A, blk 20	728	3829
Consolidated Oil Co. et al, Ferguson 12, blk 10	2000	3825
E. C. Oil Co., Burnside 1	960	4030
Hodges 1-A	720	3814
Hodges 2-A	720	3830
Lewis 2-A, blk 20	720	3813
Fain-McGaha, Griffin 4-B, blk 2	1500	3846
J. E. Farrell & Co., Waggoner Bros. 20-A, lot 24	640	3859
Waggoner Bros. 21-A, lot 24	736	3852
Greer et al, Mitchell-Gulf 2	640	3860
W. B. Hamilton-J. A. Worsham, Martin 2, sec 12	824	3777
Hammon et al, McCarty 10-K	496	3820
Hammon, Hanlon & Buchanan, Fassett-Tuttle 11, sec 2	784	3969
Fassett-Tuttle 13, sec 2	672	4009
Fassett-Tuttle 14, sec 2	720	4008
Fassett-Tuttle 18, sec 2	680	4038
Hubbell Prod. Co., Denny 2	328	3890
Hunter et al, Waggoner Bros. 43, sec 8	480	3937
Kadane-Griffith Oil Co., Mangold 5-B, blk 39	1056	3781
Magnolia, Kempner 3-B, blk 19	249	3818
Melat & Graham, Munger 4-A, blk 24	1000	3880
Moran Bros., Burnett 1	*	4290
Omohundro et al, Hodges 11	768	3797
Vierson et al, Kempner 5-B, blk 16	1200	3835
Kempner-Roach 2, blk 16	648	3865
W. E. Prod. Co., Denny 4	520	3905
Worsham et al, Preston 2, sec 20	*	4051
Wichita County—		
Akin et al, Diener 2, blk 326	*	2020
Dorian-Mitchell Oil Co., Mitchell 4, lot 7	50	1512
Gutzler et al, Jenne 2	6	228
Walton et al, Allingham 1, sec 32	*	500
Wilbarger County—		
Dearborn Oil Co., Dill 1, sec 82	*	2863
Paradise Oil Co., Waggoner Est. 4-B, sec 30	230	1554
Young County—		
Christie Bros. et al, Freeman 1	60	3800
Throckmorton County—		
Target Drl. Co.-Lee Lebin, Hunt 1	*	5023

*Failures; †Junked; ¶Million cu. ft. gas

K-M-A gasoline plant begins operations

Wichita Falls, Texas.—Continental Oil Company has placed in operation its 12,000,000 cubic foot daily capacity natural gasoline plant in the northwest portion of the K-M-A deep field. It is located on the company's Waggoner Bros. lease, Lot 7, Section 11, BS&F Survey A-387, and contracts have been signed for the gas yield of more than 300 wells. The project includes auxiliary compressor units on the east and west sides of the large field. These will later be utilized for repressuring. First test run for the main plant was made August 12.

Wichita.—Completions ran ahead of new locations in Kansas last week, 29 against 22. The completion list held 19 oil wells, with total initial output of 23,310 barrels, 1 gas well, 5 dry holes and 2 abandoned locations. By counties the locations were: Ellis and Rice, 4 each; Stafford, 3; Barton, Greenwood and Sedgwick, 2 each; Butler, Ellsworth, McPherson, Rush and Russell, 1 each.

West Texas Fields

Slaughter field production extended east and northeast. Pecos County wildcat ends as failure after much trying.

Midland, Texas.—Productive limits of the Slaughter field, Hockley County, were materially enlarged by two wells in process of completion on the east and northeast side of this large structure. Sid Richardson et al's Slaughter 2, near Sundown, developed hole full of oil and flowed occasional heads from broken lime at 4900-84 feet while awaiting nitro shot. It is 3/5 mile east of production. Gulf Oil Corporation's Mallett 2, SWc Labor 25, League 34, Concho County School Lands, is showing for a major extension with 3000 feet of oil in hole before swabbing down to acidize at 5053 feet. It is 2½ miles east of the above new well, and the same distance north by east of production. Mallett 2 logged oil pay at 4975-85 feet and 4993-5004 feet, with no saturation reported in the last 25 feet of coring. The Slaughter area is one of the most important oil strikes made in the district last year. Development has been retarded because the market outlet is restricted to tank truck shipments.

Two new wildcats have been scheduled for the north portion of the Permian basin. Magnolia Petroleum Company is rigging up for Della Wright 1, NEc Labor 7, League 96, Mills County School Lands, 3 miles southeast of Lehman, Cochran County. It is on a 5302-acre lease that requires production by November 28, and is 1½ miles north by east of a small wildcat oil and gas well completed by Geo. P. Livermore Inc. The Texas Company's Wright 1, about 1½ miles west by north of the isolated producer, was drilling with cable tools at 4680 feet, having logged top of brown lime at 3670 feet and solid lime at 4000 feet, with an elevation of 3791 feet. Andrews County gained a new project when H. C. Wheeler et al's Farmers State Bank of Carlton-Gulf 1, C SW SW PSL Section 18, Block A-36, spudded with machine to comply with contract. Gulf Oil Corporation farmed out the acreage for a Permian test, but retained the deep mineral rights. Location is midway between the Means field and Shafter Lake.

S. H. Forgeron and Olson Drilling Company's Lockhart-Brown 1, southwestern Andrews County wildcat, drilled into water at 4913-4989 feet after previously showing for a small pumper in broken pay at 4405-4780 feet after nitro shot and acid treatments. It will be plugged back for another test.

Plugging orders are due to be issued for Osage Drilling Company and A. S. Everest's Miller-Sun 1, Gaines County wildcat situated 2½ miles northwest of nearest production on the Seminole structure, after fulfilling depth contract at 5507 feet. No oil or gas shows were recorded in drilling beyond the projected pay zone.

Pecos County Failure

The most expensive wildcat drilled in the district in recent years was listed as a failure late last week when Magnolia Petroleum Company and Tex-Mex Petroleum Corporation's J. H. McKee 1-A, near Imperial, northern Pecos County, failed to make a commercial well after nitro shot in Simpson at a plugged back depth of 5306 feet. It was originally carried to Ellenburger, which yielded water, at 6102-67 feet. The first two holes were junked at 2725 feet and 1210 feet, respectively. The Simpson member of the Ordovician was 1327 feet thick, and only one test in the district has logged a greater body.

The Texas Company's University 1-G, NEc Section 7, Block 30, northeastern Crane County semi-wildcat, flowed 154 barrels oil initial, with 5 barrels salt water, then quit after 600-quart nitro shot at 3175-3350 feet. The well is 1¼ miles northwest of the discovery pumper drilled by Magnolia Petroleum Company. University 1-G drilled into water at 3472-95 feet, with an elevation of 2642 feet, and was plugged back to 3380 feet.

Sinclair Prairie Oil Company's Geo. Sealy-Magnolia 2, offsetting production in the Magnolia-Sealy pool, northern Ward County, failed to indicate commercial production in regular pay at 2835-50 feet, and picked up the lower lime at 3020-22 feet. It was carrying 600 feet of oil in the hole while drilling at 3035 feet. Previous tests found production in the lower pay.

Hilton Oils Inc., a Tulsa concern, is making its entry as an operator in West Texas with a 2-well drilling obligation on an 80-acre farm-out in the Foster field, Ector County, Indian Territory Illuminating Oil Company assigned lease on N½ SE T&P Section 24, Block 44, T-2-S, to the company for ⅛ overriding royalty. Sinclair Prairie Oil Company's Paul Moss 2-B, SWc T&P Section 40, Block 44, midway between the Judkins and Harper fields, Ector County, logged oil showings at 3950-65 feet and 3969-85 feet, and was drilling ahead below the latter depth. It is 3/5 mile southwest of the company's discovery pumper, and is checking 30 feet higher on lime markers.

Initial rating of 9,500,000 feet of wet gas was established by John M. Cooper, Geo. Morgan et al's Bert Page 2, ½ mile southeast of the only gas-distillate well in Schleicher County.

WEST TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Concho County—		
Murray et al, Armor 1	*	495
Crane County (McCamey)—		
Cravens et al, Hughes-Conoco 2	*	2575
Crane County (Magnolia-University)—		
Texas Co., University 1-G, sec 7	154	3495
Ector County (Foster)—		
Broderick & Calvert, Witcher 2	1112	4326
Stanolind, Witcher 4	896	4186
Ector County (Goldsmith)—		
Humble, Scharbauer 19-C	209	4198
Phillips-Pure, Cowden 32	1364	4172
T. P. Coal & Oil Co., Scharbauer 30	1921	4250
Ector County (Harper)—		
Oil Well Drl. Co.-E. F. Cowden, Cowden 4-B	1406	4224
Wentz et al, T. P. Land 1-B	2554	4180
Fisher County (Rotan)—		
Tide Water Associated, Waddell 2	*	3590
Gaines County (Wasson)—		
Carter et al, Wasson 1-D	1100	4993
Hockley County (Wildcat)—		
Skelly, Ellwood Est. 1	*	5183
Howard County—		
Continental & Group No. 1, Settles 2-A-S	*	1331
Magnolia, O'Daniel 8	456	2814
Jones County—		
Fain-McGaha Oil Corp., Daugherty 5	272	1941
King Oil Co., Carter 6	402	1944
Shaheen Oil Co., McCoy 1	*	2523
Pecos County (Payton)—		
British American, Cordz-Empire 3	252	2030
Pecos County (Pecos Valley)—		
Messinger et al, Fee 3	41	1341
Wesley O&G Co., Francis-Lewis 3	*	1613
Pecos County (Wildcat)—		
Bartlett et al, Byrne 1	*	1510
Minshall et al, Haynie 1	*	3278
Runnels County (Wildcat)—		
Price & Koener, Beddo 1	10	3603
Scurry County—		
Robinson Drl. Co., Martin 1	*	3515
Upton County (Wildcat)—		
Riser et al, King 1	*	735
Upton County (McCamey)—		
Ellis et al, Robbins 11-B	326	2227
Geo. F. Getty, Shirk 3	114	2755
Gulf, Lane 5-C	228	2270
Ward County—		
Gulf, Estes 101	384	2610
Magnolia, Sealy 7-46	432	2850
Winkler County (Kermit)—		
Humble-Tide Water, Walton 9-D	605	2990
Magnolia, Walton 172	855	2921
Yoakum County (Bennett)—		
Mid-Continent, Bennett 6	2177	5227
T. P. Coal & Oil Co., Bennett 9	2276	5240
Yoakum County (Wasson)—		
Gulf, Moore 1	464	5100
Shell, Dowden 3	165	5071
Roberts 3	419	5156
Yoakum County (Wildcat)—		
Phillips Drl. Co., O'Brien 1	*	5506

*Failures; †Junked; ¶Million cu. ft. gas

June marked turn in recession for petroleum industry

Manufacturers' sales of petroleum products during the first half of 1938 were 5.6 percent below the first six months of 1937, according to a special analysis of sales data made by the Marketing Research Division of the Bureau of Foreign and Domestic Commerce. The 16 manufacturers of petroleum products who reported to the bureau had sales aggregating $202,249,000 for the first six months of 1938.

The report reveals both the extent of the current recession on the petroleum industry and the beginning of the business upswing. It shows a drop of 6.3 percent in sales in June, 1938, over the same month in 1937, indicative of the extent to which the petroleum manufacturers were affected by the depression, and it reveals an increase in sales of 3.3 percent in June over May, showing the beginning of the swing back to normalcy.

TEXAS PANHANDLE
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Magnolia, Fee 44, lse 244	579	3000
Hutchinson County—		
Danube Oil Corp., Johnston 1	20	3057
Hobbs Oil Corp., Hodges 3	561	3029
J. M. Huber Pet. Co., Herring 6	¶7.2	2950
Mid-States Oil Corp., Whittenburg 20-A	766	2966
Murphy et al, Whittenburg 3	739	2740
Seaboard, Whittenburg	440	2708
Smith Bros. Ref. Co., Herring 2	20	3305
Stayton Oil Co., Moore 9-C	210	3165
Moore County—		
Shamrock O. & G. Corp., Coffee 1-H	¶43.4	3175

*Failures; †Junked; ¶Million cu. ft. gas

East Texas Fields

Marion County well makes 30 million feet gas

Shreveport.—An anomalous situation developed last week in Marion County, Texas, when Arkansas Fuel Oil Company successfully completed Johnson 1, Alexander Johnson Survey, Marion County, as a 30,000,000-foot wet gasser in the Henderson sand, topped at 5984 feet, after having failed to find production in the Hill and Dees horizons; elevation is 217 feet.

This well is 1 mile south of the same company's Pitts 1, Charles Lockhard Survey, recently completed in the Hill horizon, being 2½ miles southwest of former Jefferson production. The Henderson in the latter well was not found productive.

This anomaly is explained by some as indicating that the Rodessa Fault at the Jefferson end is "fractured" with a series of faults resulting therefrom.

Another outside test in Marion County gave indications of being productive and set final casing. This is Arkansas Fuel Oil Company's Walker 1, J. Humphries Survey, which logged a showing of oil and gas from 5921 to 5961 feet.

The Texas Company's Claude Adams 1, Thomas Cox Survey, Panola County, continued to drill ahead at 10,786 feet in hard black shale.

W. F. Bridwell and associates announced they would deepen Platt 1, F. C. Baker Survey, Harrison County wildcat drilled several months ago, to 5167 feet. It will be deepened to basal Glen Rose lime.

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Atlantic, Pinkston 18-A (87-ac)	4000	3727
Blackwell O. & G. Co., Stone 8-B (32½-ac)	7300	3652
J. C. Hawkins-C. L. Anderson, Moore 2 (8.15-ac)	750	3750
Hunt Oil Co., Bradford 21-D (176.3-ac)	400	3601
Bradford 19-B (98.15-ac)	250	3665
Jones et al, Moore 8 (27.86-ac)	7600	3640
Magnolia, Mason 21 (144.8-ac)	480	3685
Ohio, Griffon 20 (65.61-ac)	480	3700
Owenwood Pool No. 3, Mullins 8 (30-ac)	5800	3770
Pine Pet. Co., Giles 12 (30.44-ac)	3600	3720
Sinclair Prairie, Wright 31 (152.51-ac)	2000	3785
Vaughn Prod. Co., Alford 12 (80-ac)	†	1412
Kilgore Area—		
Carroll et al, City of Kilgore 2	500	3557
Cook et al, Irion 1	*	3699
Donnell et al, Buckner 2 (8.1-ac)	200	3794
Exum, rec., Mitchell 9 (6¼-ac)	7000	3598
Gold Star Oil Co., Butts 2 (36/100-ac)	2500	3549
Gulf, Culver 38 (209.01-ac)	4800	3565
Humble, Crim 182 (914.51-ac)	7500	3581
Crim 183 (914.51-ac)	7000	3592
Shell, Watson 84 (385.2-ac)	9000	3673
Silvey et al, Beasley 3 (19.7-ac)	1500	3850
Longview Area—		
Gen'l American Oil Co., McGrede 26 (84-ac)	7800	3617
Humble, Miller 15-B (99.35-ac)	4200	3722
Stanolind, Smith 13 (69.83-ac)	5400	3580
Snoddy 3-C (12.29-ac)	6000	3577
Sun, Loden 21 (100.58-ac)	6500	3656
Angelina County—		
Hoffman et al, Jones 1	*	2070
Franklin County (Talco)—		
Humble, King 59 (1053.36-ac)	233	4284
Freestone County (Cayuga)—		
Collins-Wheelock, Harwell 6	2500	4034
Franklin County—		
Hughes et al, Hayden-Shell 1	*	4345
Navarro County—		
Fearis et al, Montgomery-Texas Co. 1	*	3761
Rains County—		
Parsons & Andree, Glass 1	*	4246
Marion County (Jefferson Rodessa)—		
Arkansas F. O. Co., Johnson 1, Alexander Johnson sur	¶30	6127
Holcomb & Thomasson, Henderson C-1, R. Bennington sur	439	6090
Texas Co., Chatten 2, W. R. Meyers sur	876	5968

*Failures; †Junked; ¶Million cu. ft. gas

Slight revival of drilling during week

Kilgore, Texas.—A nominal revival of drilling in the East Texas field was apparent the past week when active rigs increased to 47, with a total of 84 operations. Drilling tests ranged from 35 to 39 total the three previous weeks, establishing a low mark of several years standing. The railroad commission has approved 36 additional permits that involved exceptions to the spacing rule, and these will likely be drilled in the near future. During the same week last year the field was credited with 224 operations, including 89 drilling tests.

The current report on field activity credits the majors with 46 operations, including 23 rigs in service, while the independents are running 24 rigs, and other listings make a total of 38 operations.

The East Texas field has a base allowable of 515,369 barrels daily from 25,466 wells, including 19,242 producers that are classed as marginal, according to the commission's records on August 23. On this date there were also 60 dead wells, and 79 indefinitely off production. Enforcement of the Sunday production holiday reduces the actual daily output to 441,745 barrels.

Gas utility revenues dip in first six months

Domestic customers served by manufactured and natural gas utilities totaled 15,898,100 on June 30, an increase of 265,900 over the number reported on the same date a year ago, it was announced August 16 by Paul Ryan, chief statistician of the American Gas Association.

Revenues of manufactured and natural gas utilities aggregated $421,092,700 for the first six months of 1938. This was a decrease of 2.4 percent from the corresponding period of 1937.

Revenues from industrial and commercial users decreased 9.5 percent, while revenues from domestic customers gained 1 percent.

Manufactured gas industry revenues totaled $187,617,700 for the first six months, an increase of 2.0 percent from a year ago. Revenues from industrial and commercial users of manufactured gas declined 3.1 percent. Revenues from domestic uses, such as cooking, water heating, refrigeration, etc., were 2 percent more than for the corresponding period of 1937.

Revenues of the natural gas industry for the first six months amounted to $233,475,000, a loss of 5.7 percent from a year ago. Revenues from industrial uses decreased 15.8 percent, while revenues from domestic uses declined 1.4 percent.

The quantity of natural gas used in generating electric power during the six months ending June 30 amounted to 75,751,300,000 cubic feet. This represented an increase of 2.2 percent from the corresponding period of 1937.

West Virginia gas school attracts 350

More than 350 engineers and service experts attended a three-day gas measurement short course August 22 to 24 at West Virginia University, Morgantown, conducted jointly by the Natural Gas Department of the American Gas Association, West Virginia Oil & Natural Gas Association, the West Virginia public service commission and the university.

Presiding over speaking sessions was H. J. Wagner, gas engineer for the state public service commission. John J. D. Preston, commission chairman, declaring a need for conservation of the state's natural gas supply, suggested that wells in a given field be spaced so as to prevent reduction of production at one well or the too rapid drawing off of gas to the detriment of the entire field.

"The problem of true and proper conservation of this natural but exhaustible resource should receive immediate attention," Preston declared. "The problem for the careful draftsman of legislation is to close the gap between desirable social public policy and narrow technical legal rights. The statute on whatever theory should be short, simple and comprehensive and should give the conservation agency broad and elastic powers for the desired purposes."

Pointing out that the state is fifth in marketed production and ninth in consumption of natural gas, Preston added: "It is a well-known fact that there are a great number of unnecessary wells drilled annually in proven fields. The amount of money spent in the country as a whole for drilling wells has been and is enormous. Most of this loss occurs in states such as ours which have inadequate or no conservation statutes. Our sketchy statute on the subject seems an approach largely from the coal mining standpoint."

The commission head warned that no adequate conservation program could be worked out unless all operators and landowners "desire it and take cooperative action."

Others who spoke or read papers during the course included Dr. R. C. Colwell, head of the university physics department; Dan Keenan, vice president of Carnegie Natural Gas Company, Pittsburgh; B. L. Maulson, general manager of Lynchburg Gas Company, Lynchburg, Virginia; A. F. Benson, of American Meter Company, Bridgeport, Connecticut, and Richard Aspinall, assistant to the university president.

JACK SCHAFFER, drilling contractor of Oklahoma City, who drilled several wells in the Illinois basin area last year, visited Flora and other Southern Illinois oil centers last week.

Southwest Texas Fields

Lower Coast hums with discoveries and extensions. Magnolia is opening new field in Jackson County. Birdie Rooke Ranch field is extended 7600 feet.

Corpus Christi.—After several slack weeks, the Lower Gulf Coast of Texas made an outstanding comeback with new discoveries scattered across the whole trend. Jackson County provided a new oil field, Refugio County's new area was extended 7600 feet, a deep sand at Saxet in Nueces County proved excellent producing qualities, Luby field in Nueces County gained an extension to offset the large King Ranch, and Alice in Jim Wells County scored major extensions and new producing sand.

Magnolia Petroleum Company's West Ranch 3-A, on a block of 11,500 acres south of Vanderbilt in Jackson County, should be gauged over the week-end. The well, drilled to 5086 feet, 6 feet in sand, is showing for an excellent producer from the Heterostegina or Greta zone.

The strike is looked upon as being of great importance as it is the first to produce from this sand in Jackson County. Other pools in this sector have been from the Marginulina and Frio zones.

The discovery, third by this company on the ranch, is located 4100 feet north, 64 degrees west of West 2-A, and 5650 feet west of the Lavaca River (east line of lease), Ramon Musquiz Grant. West 2-A made a gasser and flowed a small amount of oil from the 5000-foot zone, but went to salt water and was abandoned.

Open Alice Sand

H. H. Howell opened the 4700-foot sand, logged in numerous wells in the Alice field, when H. J. Mosser 1 was completed for 160 barrels of pipe line oil per day through 3/16-inch choke under pressures of 750 pounds on tubing and 1400 pounds on casing. Completion was effected through perforations at 4788-4799 feet, where 12 shots were made.

The Howell producer is in the northeast corner of Lot 97, Collins subdivision, and is a 2-mile southwest extension to production as well as a discovery of a new sand. It found several feet of hard sand at the 5300-foot level, not considered sufficient to make a producer. The well has been drilled to below 7260 feet, finding sand section 7190-7260 feet, apparently in the Cockfield, where it tried to blow out. The hole bridged and casing was landed around 5000 feet.

Southwest Extension, too

About ¾-mile southwest of the main field, Pratt and Browning were completing C. B. Stillwell 1, Block 62, as a producer in the 5300-foot Vicksburg zone. The well cored oil sand 5289-5305 feet and showed for a producer on drill stem test. Plugs had been drilled, casing perforated and tubing run late in the week. It will create an active drilling program on offset locations.

Coronado Oil Company (I. J. Allen) added 7600 feet to the distillate producing area opened on the Birdie Rooke Ranch recently when Rooke 1 cored a solid sand zone from 5364-5420 feet. The well, northwest of the southwest corner of Section 3, Bonnie View subdivision, and 5 miles south of Woodsboro, had been abandoned at 4568 feet, but resumed operations after the La Rosa field was opened. A drill stem test at 5364-77 feet recovered 15 feet of mud cut with distillate and rocked up 400 pounds pressure in four minutes. Another test at 5387-97 feet showed 355 pounds pressure and 10 feet of distillate in four minutes. A drill stem test then was made at 5415-20 feet, recovering 1860 feet of salt water in 20 minutes. The well was going ahead below 5500 feet at last reports. Rooke 2, 7600 feet to the northwest, opened the field several weeks ago, flowing 205,000,000 cubic feet of gas and spraying some distillate from the 5400-foot zone.

Luby Nears King Ranch

Luby field was extended to within less than ¼-mile of the famous King Ranch by the Sun Oil Company's H. L. McCann 2, Share 9-G, which flowed 34 barrels on a 7-hour test through chokes ranging from 7/64 to 9/64-inch. Pressures were 750 pounds on tubing and 975 pounds on casing. The well found gas sand at 5026-42 feet, oil sand at 5042-46 feet, sandy shale at 5046-48 feet, sand and shale at 5048-51 feet, sand at 5051-58 feet, sandy shale at 5058-65 feet, bottom of hole. Casing was set on bottom and perforated at 5055-58 feet. This well is about flat with the field and indicates that the Humble Oil & Refining Company shortly will be required to begin operations on its 1,500,000-acre, 20-year lease.

Hiawatha Oil & Gas Company's F. J. Smith 7-B, Block 37, and west offset to the discovery well of the deepest sand in Saxet field, Nueces County, has been completed, flowing 335 barrels of pipe line oil per day through 5/32-inch choke, pressures registering 1200 pounds on tubing and 1400 pounds on casing. The well found sand with oil and gas odor at 7240-78 feet, oil sand at 7324-44 feet, and drilled to 7468 feet, casing being landed at 7428 feet. Perforations were made 7261½-64½ feet for the completion. Several wells have been completed in this sand, but this producer is the first to show such outstanding performance.

Stratton to Be Busy

Preparations are being made to carry on an extensive drilling program in the Stratton field of Nueces County, where 6 gas and distillate producers have been completed in sands ranging from 4750 to 6600 feet. John F. Camp Production Company sold its 8300-acre block to Corpus Christi Corporation for a large cash consideration, plus oil payments, overriding royalty and agreement for development, which includes a natural gasoline plant with a capacity of 500,000,000 cubic feet per day.

Magnolia Petroleum Company may have a new pool in the making in M. E. Martin Heirs 1, Ana Maria Vaca League, 16 miles north of Alice, Jim Wells County. The well was progressing below 6200 feet in the Cockfield zone after an attempted blowout at 6100 feet. At this level, it was necessary to pump in several hundred sacks of commercial mud. The volume was not considered great, but the pressure was high.

Frio County wildcat swabs salt water from Navarro

San Antonio.—George E. Smith's San Antonio Joint Stock Land Bank 1, Section 1, Frio County, has been abandoned after swabbing salt water from the Navarro sand 3726-38 feet. The well, six miles northeast of Pearsall, attempted to open a new field on a prospect worked by the Humble Oil & Refining Company. It is 50 feet north of Thomson et al's test on the same tract, which had shown oil in the same zone, but which was carried ahead to the Edwards limestone.

On the Anchorage prospect, Atascosa County, Western Gulf Petroleum Corporation's Venegas 1, was being tested again. It found serpentine 2703-43 feet, set casing at 2724 feet and attempted completion. About 90 feet of sand was swabbed into the hole, indicating a bad cement job. It was recemented and another test was being made.

M. S. Blackburn et al are rigging up for W. F. Miller 1, in Survey 234, eight miles northeast of San Antonio, Bexar County. It is on a geophysical prospect and is projected to the Glenrose formation, expected around 2000 feet.

To build large gasoline plant at Stratton field

San Antonio.—Stearns-Rogers Corporation of Denver has been awarded contract for the construction of a 50,000,000 cubic foot natural gasoline and recycling plant in the Stratton field, Nueces County. Work is expected to start immediately.

The plant is the result of a deal whereby Camp Production Company of this city has transferred its 8300-acre block 6, gas/distillate producers, and other properties on the C. P. Wardner, Trustee, ranch to Corpus Christi Corporation. The transaction is reported to have involved approximately $1,000,000.00, cash and oil, plus overriding royalty interests to the Camp concern. The natural gasoline and repressuring plant is to involve the expenditure of another $500,000.00.

Production in this field ranges from 4750 to 6600 feet and all sands produce either water white or colored distillate with the gas. Large volumes of gas and fairly large flows of fluid have been obtained on production tests thus far made. Several thousand acres of the solid block already have been proved productive and additional acreage is expected to produce in the multiple sands.

Camp Drilling Company, another John F. Camp interest, is to be given the con-

tract for drilling a number of wells on the structure.

The Texas Railroad Commission has given these concerns permission to withdraw 25 percent of the potential of these wells, provided the gas is returned to the formation. Ultimately, it is expected that this will be converted into one of the largest dry gas reserves along the Texas Gulf Coast, the gas being held for future market.

John J. Sherrin, formerly president of the Shamrock Oil Corporation, and Clyde Alexander, formerly vice president and general manager of the Phillips Petroleum Company, are among officials of the new corporation.

Allbright is completing McMullen County wildcat

Laredo.—Nueces Land and Livestock Ranch in southwestern McMullen County, which for months has been the scene of an active wildcatting program, finally is receiving its reward. Completion will be effected over the week end in Bruce Allbright et al's first operation on this ranch, which is in Mirando sand at 1202-13 feet. Casing was set atop the showing.

The prospective field opener is ½ mile east of N. V. Duncan's test and is in the southwestern corner of the county, near the point where LaSalle-McMullen-Duval-Webb Counties join. The exact measurements are NW NE SW BS&F Survey No. 119.

Second Well for Tesoro

Rowan and Hope added the second producer to the new Tesoro pool of Duval County with Cuellar Brothers 1. The well drilled to 5360 feet, set 5½-inch casing at 5117 feet and flowed 150 barrels per day after perforations were made 5073-84 feet with 20 shots. The flow was through 5/32-inch choke, pressures being 660 pounds on tubnig and 1300 pounds on casing.

Stewart and Nye's W. R. Peters 1, NW SE NS Section 29, about ¾ miles southeast of the Rancho Solo field, Duval County, was testing the Cole sand through perforations at 1853-56 feet. A test at 1853-70 feet, where previous perforations had been made, developed considerable salt water with the oil. The test had been drilled to the 3200-foot Pettus sand.

Standard Oil Company of Texas abandoned Dolores Garcia 1, Share 4, southeastern Duval County, in heaving shale after drilling nearly 700 feet into the Yegua. The test is bottomed at 7095 feet. Cockfield was topped 6145 feet and Discorbis Yeguaensis at 6321 feet.

Trying to open 9400-foot production in Mercedes

Mission.—Union Sulphur Company continued to test American Rio Grande Land and Irrigation Company 11, attempting to open production at 9400 feet in Mercedes field, Hidalgo County, 2000 feet deeper than the field's regular level. The well, drilled to 9618 feet, had liner set to the bottom of the hole and perforated several places in the lower portion of sand at 9400-50 feet. As the week closed, tests were being made at 9400-10 feet.

R. E. Harding et al's Lynn (Woody) 1, Block 202, Porcion 69, discovery well of McAllen pool, Hidalgo County, was still testing through perforations 5970-74 feet. The well showed considerable mud when the first production attempt was made, and was washed with oil. It had drilled to 7214 feet, but plugged back.

Texas permits up

The Texas Railroad Commission last week approved permits for drilling 257 new wells in Texas, 89 more than were allowed the week before. Operators in the East Texas field reported 31 locations, including 16 in Gregg, 6 in Rusk, 5 in Upshur and 4 in Smith County. Twelve permits approved in the remainder of East Central Texas area. West Texas operators reported 31 locations while 19 were listed from West Central Texas.

A total of 71 permits were approved in the Gulf Coast area with 17 in Harris, 13 in Brazoria and 10 in Nueces County. Southwest Texas operators reported 54 permits including 21 in Duval and 10 in Jim Wells County. Commission approved 31 locations in North Texas, including 27 in Wichita County, while Panhandle operators were allowed 8 permits.

PETROGRAPHIC AND PHYSICAL CHARACTERISTICS OF SANDS FROM SEVEN GULF COAST PRODUCING HORIZONS,

By M. T. HALBOUTY, B.S., M.S., Merit Oil Corp.

The material printed in this book was first published in The OIL WEEKLY in a number of installments, extending over a seven-week period. Because of the widespread interest and demand for copies, it is being presented in book form for the benefit of those who may wish to study or continue the research work of M. T. Halbouty, the author.

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SOUTH TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
LAREDO DISTRICT		
Duval County—		
Benedum-Trees, Puig 17, North Sweden	500	4741
Continental, Driscoll A-25, Driscoll	200	3333
Magnolia, Well 10, Hoffman	450	2812
Rowan & Hope, Cuellar 1, Tesoro (perf 5073-84 ft)	400	5360
Standard, D. Garcia 1, Concepcion grant	*	7095
Sun, Brueggemann 1, Fitzsimmons	550	4279
McMullen County—		
Boysen & Jones, Nueces 5, survey 229	*	1006
Webb County—		
Massingill & Belew, Killam & Martin 2, Olton	67	1899
Nicholson, Nicholson 1, sur 910	*	3505
Red Bank, Yeager 1, survey 581	*	1888
Zapata County—		
Dulup, Trevino 36, Escobas	100	1357
Transwestern, Trevino E-14, Escobas	10	1275
CORPUS CHRISTI DISTRICT		
Calhoun County—		
Barnsdall, Traylor 2, Heyser	650	5474
Sinclair-Prairie, Bennett 6, Heyser	600	6045
Hidalgo County—		
Grabowski, Guerra 1-B, Samfordyce	425	2925
Jim Wells—		
Bryant, Rattan 1, Alice	600	5331
Howell, Mosser 1, Alice (perf 4788-99 ft)	550	7335
Wallis & Hawkins, San Diego & Flores sur	*	6789
Texas Gulf, Stillwell 1, Alice	700	5260
Nueces County—		
Barnsdall, Humphrey 7-A, Saxet, pb td 6012 ft	400	6750
Conroe, Bliss 10, Saxet (perf 6895-98½)	850	7505
Hiawatha, Smith B-7, Saxet (perf 7261½-64½ ft)	600	7468
Ohio, Shaffer 4, Luby	500	5150
Phillips, Clark 2, Turkey Creek	400	5815
Seaboard, Luby 14, Luby	500	5084
Shaffer 11, Luby	500	5066
Stanolind, Spessard 11, Luby	500	5065
Sun, McCann 2, Luby	250	5065
Texas, Richardson 1, South Clara Driscoll (perf 5112-15 ft)	500	5431
Refugio County—		
Copano, O'Connor 11-B, Tomoconnor	1350	5927
O'Connor 15-B, Tomoconnor	1350	5918
O'Connor 30-B, Tomoconnor	1350	5904
Hewitt & Dougherty, Lambert 74, Tomoconnor	*	6590
Houston, Pratt-Hewitt-Rooke 53, Refugio	750	6214
Quintana, O'Connor 70A, Tomoconnor	2500	5932
O'Connor 32-C, Tomoconnor	3000	5924
W. R. R., Mission Riverbed 1, Refugio	500	4915
San Patricio County—		
Plymouth, Brooks 1, E. White Point	600	5680
Welder 101-C, Plymouth	600	5643
Victoria County—		
Echols, Bennett, Heyser	750	5585
Seaport, Diener 4, Heyser	500	5494
Stanolind, Henderson & Pickering, Ne. Placedo	*	6510
SAN ANTONIO DISTRICT		
Bastrop County—		
Ogden & Riddle, Bunton 1, Riddle	5	1758
Bexar County—		
Shadrock, Barragan 15, Von Ormy	3	660
Caldwell County—		
Luling, Carter 4, Salt Flats (pb to around 2350 ft)	50	3300
Marts & Beavan, Nix 1, Pace sur	*	1614
Robinson & Coffield, Young 4, Branyon	20	2348
Wiegand, Briscoe 2, Salt Flats	70	2710
Frio County—		
Smith, Land Bank 1, survey 1	*	3738
Guadalupe County—		
Humble, Denman 25-A, Darst Creek	22	2551
Val Verde County—		
Little, Sellers 1, Block A, I&GN sur	*	80
Val Verde, Whitehead & Wardlow 1, block D, GC&SF survey	*	451
Whitehead & Wardlow 2, block D, GC&SF survey	*	318

*Failures; †Junked; ¶Million cu. ft. gas

Texas Gulf Coast

Wildcat on Pearland prospect reported abandoned.

Rattlesnake Mound wildcat abandoned at 7007 feet.

Eureka outpost location flows 20 barrels per hour.

Houston. — Glenn H. McCarthy's wildcat, Street 1, Hunter Survey, on Pearland prospect, Brazoria County, north and a little west of Albert Plummer's abandoned well that was approximately 600 feet high structurally, was reported abandoned after an electrical logging device was run and side wall cores were taken. No depth or geological markers have been given out. According to reports, the well logged salt water sands in Frio formation and further reliable reports state that the well was higher than the Plummer well.

Failure of McCarthy's wildcat at Pearland does not condemn the prospect. Opinions of leading geologists are that all the wells drilled in the area are in a graben or between two faults. Three wildcats abandoned on Pearland prospect are about a half mile apart. Operators in the Pearland area are anxious to see a well drilled just north and a little east of the Hunter Survey and on the other side of the fault.

Another Wildcat Fails

On Rattlesnake Mound prospect, Brazoria County, W. C. Neville et al's Houston Farms Development Company 1, Perry & Austin Survey, was abandoned last week at 7007 feet in salt water sands. Top of the sand was logged at 6950 feet. Salt water sands were also cored at intervals from 3923 to 5853 feet.

Sun Oil Company has entered Old Ocean field, Brazoria County, where Harrison & Abercrombie have been the sole operators. Location was made for William Cambell 1, 1929 feet northwest and 660 feet northeast of the south corner of a 343-acre tract in the C. Breen Survey. The well will be drilled to 10,500 feet or deeper.

Harrison & Abercrombie have two wells at Old Ocean at completion stages. Larsen & Edling 1, C. Breen Survey, is being tested. It was reported making 350 barrels of high gravity oil daily through various size chokes from 10,159 feet. Sadlet & Larsen are setting casing in oil sands at 10,297 feet.

Fairbanks and Satsuma Closer

Fairbanks field, Harris County, is becoming of major importance and is being extended in all directions. Midway between the Satsuma and Fairbanks field, Housh & Thompson's Fisher Estate 1, T. Hogan Survey, was coring in broken formations below 6400 feet at the end of the week and it is running higher than some wells at Fairbanks and Satsuma which are good producers. The well should reach the 6850-foot sand soon. If it is a producer it will bring Satsuma and Fairbanks field closer together and the two producing areas will probably be classed as one, but producing from two different sands.

Approximately 4000 feet east of production at Fairbanks, Stanolind Oil & Gas Company is preparing to test Look 1, S. Lewis Survey. The hole is bottomed at 7495 feet in shale · 7-inch casing has been set at 6938 feet. The well logged broken formations with odors and shows of oil and they looked good enough on an electrical logging device to be tested.

On the north flank of the field, Mortex Oil Company is washing in Reid 1, G. Ayers Survey. Reid 1 was drilled to 6847 feet in oil sand after topping the pay at 6810 feet.

Southwest of production at Clinton 1½ miles S. G. Harrison et al's E. Lafferty Estate 1, was abandoned at 4515 feet after logging salt water sands from 4325 to 4335 feet in Miocene sands.

On the west flank of Clinton, Sun Oil Company abandoned its first well in the field after coring salt water sands in Oates 1 at 4516 feet.

Jack Frazier was drilling ahead in L. Lackner 1 at Eureka, Harris County, after making a drill stem test of a new sand. It made an 11-minute drill stem test from 8074 to 8092 feet through quarter-inch chokes and showed 120 feet of 50 gravity distillate and a 475-pound pressure. The hole is projected to 9000 feet.

Means & McGehee's L. Lackner 1-C, Eureka, Harris County, was flowing 25 barrels per hour through a quarter-inch choke last week from perforations from 7702 to 7712 feet. Tubing pressure was 1000 pounds and casing pressure was 500 pounds.

Eureka Outpost Flows

Tide Water Associated Oil Company's north outpost test at Eureka, L. Lackner 1-B, was on potential at the end of the week. It came in flowing an estimated 20 barrels per hour through a quarter-inch choke from perforations at 7688 to 7698 feet. Tubing pressure was 1150 pounds and casing pressure was 950 pounds.

The second well for Cheek, Shell Petroleum Corporation's Ed Pleasant 1, C. Hillebrand Survey, Jefferson County, was being reworked after a production test was made last week. Pleasant 1 was perforated from 7717 to 7720 feet with 12 shots, and it was swabbed in making 35 barrels of 52.4 gravity distillate in 22 hours through a 3/16-inch choke. Tubing pressure was 2750 pounds and casing pressure was 2350 pounds.

Shell Petroleum Corporation's second well at Clam Lake, McFaddin 2, S. A. Pace Survey, failed to show anything of commercial importance in a new sand at 3801 feet. The well is shut down waiting on orders.

At North Cheek, Jefferson County, Magnolia Petroleum Company's Phelan 5, northeast of production, S. Stivers Survey, was making 108 barrels of 62.7 gravity distillate daily through quarter-inch chokes. Tubing and casing pressures were 1825 pounds. The well was completed in sands at 8310 to 8319 feet.

On the General Crude Oil Company block at Lovall Lake, Jefferson County, Geo. H. Echols et al made location for American National Bank 1, at a point 330 feet south of the west line and 660 feet west of the east line of a 263.36-acre tract in the J. J. French Survey, abstract 23. This prospect has been worked with geophysical instruments by several major oil companys. Hebert & Smith, local lease brokers, did considerable work in this area before Geo. H. Echols et al made location.

In the Katy area, Waller County, Stanolind Oil & Gas Company et al are pumping cement in Freeman 1, H. & T. C. Survey Section 99. After drilling to 11,066 feet the well was plugged back and perforated from 7365 to 7385 feet and it came in as a gas well. Tubing pressure was 4340 pounds and casing pressure was 500 pounds. Stanolind Oil & Gas Company has made two new locations in this district. Seymour 1 is 1320 feet north and west of the southeast corner of a 320-acre tract in H. & T. C. Section 80. Robertson 1 is 1320 feet north and east of the southwest corner

TEXAS GULF COAST

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Humble, Tyrell 25	665	7085
Batson—		
Texas Gulf, Christian 4	62	2182
Big Hill—		
Stanolind, Pipkin A-5	*	8290
Brenham—		
Freeport Sulphur, Schurenberg 1	*	2385
Virginia Oil Co., Kenieczny 5	*	50
Boling—		
Texas Co., Taylor A-17	*	5464
Clinton—		
Sun, Oates 1	*	4614
Danbury—		
Rowan & Shell, Jamison 7	220	1977
Dickinson—		
J. K. Hughes, Ecret 3	720	9055
Pure, Sealy-Hutchins 4-B	632	8094
Eureka—		
Jack Frazier, Vollmer & Neiman 4	18	7786
Esperson—		
General Crude, Sun Oil Co. 39	182	4134
Fairbanks—		
Amerada-Stanolind, Berryman & Emmott 1	344	6830
Couget 3	307	6858
Franconne 1	474	6844
Gem Oil Co., Reid 5	649	6849
Smith & Owenby, Gibson 3	100	6862
Skelly, Emmott 2	230	6840
H. E. Williams, Kramer 1	610	6854
Friendswood—		
Humble, Tinkler 1	585	6057
Hardin—		
Atlantic, Richardson 3	503	7675
Geo. Echols-Shell, Cessna 1	24	7659
Halliburton, Hanchey 2	519	7654
McCarthy & Shell, Johnson 1	32	7651
Shell, Cessna 3	*	7678
Tide Water, Cessna 2	518	7655
Hastings—		
Stanolind, Law 7	595	6140
Schmidt 2	527	6080
High Island—		
Stanolind, Cade B-3	125	4865
Humble—		
Wilson Oil Co., House 14	536	3567
North Dayton—		
Whitley Oil Co., Moore 3	5	736
Orange—		
Ryan-Andrews-Tillery, Chesson 2-A	400	5963
Seabreeze—		
Sun, Broussard Hebert 3	145	8484
Spanish Camp—		
Humble, Northington 1	*	7671
South Bay City—		
Atlantic, J. Gola 1, dr to 9616 ft, pb and comp	417	8135
Spurger—		
Republic Fee 11	574	7750
Tomball—		
Humble, Holderreith B-3	120	5563
Holderreith 4	¶1	5555

*Failures; †Junked; ¶Million cu. ft. gas

of a 640-acre tract in the H. & T. C. Survey, Section 123.

Hubert Holt's Greer 1, Garlos area, Grimes County, logged a sand with a gas odor from 2757 to 2760 feet and sand showing oil from 2760 to 2761 feet and was shut down at the end of the week waiting on orders. Casing was set at 2747 feet.

Northwest of Citrus Grove and south of Simpsonville-Robbins Ranch prospect, Matagorda County, Maja Oil Company made location for F. S. Robbins 1, 580 feet from the west line and 1612 feet from the south line of the lease in the A. Sheppard Survey.

A mile south of production at Turtle Bay and out in the bay, Stanolind Oil & Gas Company made location for State 1-38. It is 8000 feet southeast along the northeast line of tract 38 from the north corner of same, thence 1300 feet southwest at right angles or 6000 feet south of State 2 and in line with State 2 and Cooper 1.

Also Standard Oil Company and Salt Dome Oil Corporation made locations for State 2-118 at Cedar point, in Galveston Bay, Chambers County. It is 1399 feet from the northwest line and 1399 feet from the northeast line of tract 118.

South Louisiana

Salt water forces killing Bancroft's first oil well. Humble swabbing oil and gas from new Darrow sand. Shell prepares to test deep sand in Gibson outpost.

Lake Charles.—Salt water intrusion in Republic Production Company's Columbia Lank & Timber Company 1 at Bancroft, Beauregard Parish, forced the operators to kill the first oil well for workover operations. The discovery well started making a small amount of salt water from lower Cockfield formation at 7330 feet and cement was squeezed through 30 holes from 7320 to 7330 feet. Casing will be perforated a little higher for another production test. The well was brought in the previous week flowing an estimated 500 barrels of 43 gravity oil per day through a ¼-inch choke. Bancroft was established some time ago by the company as a gas field.

Humble Oil & Refining Company is attempting to open a new producing sand at Darrow, Ascension Parish. Community B-1 was swabbing oil and gas at 4363 feet at the end of the week. The well was drilled to 7930 feet in salt topped at 7924 feet, and was plugged back to 4416 feet before testing operations were started.

Also at Darrow, Southern Drillers, Incorporated's A. Berteau 1 was setting 7-inch casing to protect the hole at 7744 feet. The hole heaved and was then washed to bottom. A. Berteau 1 has logged sands with oil shows below the regular producing horizons.

To Test Gibson Outpost

Three fourths mile south of production at Gibson, Terrebonne Parish, Shell Petroleum Corporation is running 5½-inch casing in Kuntz 1 for production tests. Casing was set at 10,557 feet. Kuntz 1, which logged a sand with shows of oil at 10,549 feet, has logged several promising oil sands above and below the established producing horizon at Gibson.

The Minor or Lake Hatch prospect, Terrebonne Parish, received another setback last week when Shell Petroleum Corporation abandoned Realty Operators C-1 at 11,208 feet. No shows of major importance were encountered.

At South Houma, Terrebonne Parish, Shell Petroleum Corporation's Peters 1 cored oil sand from 9739 to 9797 feet and sand with an oil and gas show from 9775 to 9793 feet. Coring was still in progress with a drill-stem test in prospect the coming week.

In St. John the Baptist Parish, Shell Petroleum Corporation's Godchaux 1, La Place, cored from 8758 to 8763 feet in sand with a slight show of gas; 8923 to 8927 feet, sand showing oil; 8927 to 8933 feet, a faint odor of oil, and from 8933 to 8934 feet, sand with a salty taste.

At West Lake Verrett, St. Martin Parish, Shell Petroleum Corporation's Jeanerette Lumber Company 1 was plugged back from 10,550 to 6950 feet where at the end of the week it was shut down for cement to set.

In Lafourche Parish, Sun Oil Company's Dilbert, Stark & Brown 1 cored a sand with a slight show of oil at 7256 feet and probably will make a drill stem test the coming week.

On the south flank of Welsh dome, Jefferson Davis Parish, Stanolind Oil & Gas Company abandoned Poussen 1 at 7020 feet after failing to pick up a new deep sand.

Pan American Production Company is cutting and pulling liner in Community 1-B, south of production at Valentine, Lafourche Parish. The extension well logged a new sand from 9318 to 9325 feet and the well attempted to blow out. After the hole has been cleaned out and conditioned the crew will run tubing for a production test.

The new sand found from 5330 to 5352 feet in Gulf Oil Corporation's State PP 4 at Timbalier Bay showed 10 ohms and 120 millivolts on an electrical logging device and at the end of the week the well was down to 6670 feet in shale.

The first 12,000-foot well at Raceland is Amerada Petroleum Corporation's South Coast Corporation 2, which is running 4¾-inch casing at 12,200 feet after attempting to run an electrical logging device to bottom three times. Each time the device was run the hole bridged. It was finally run to 11,050 feet.

The second Oligocene well on the southwest flank of Hackberry, completed last week by Superior Oil Company, is better than the first well completed in this new sand. Benson-Vincent 3 made 321 barrels in 12 hours through a 14/64-inch choke with tubing pressure of 1150 pounds. The well was completed in sands at 6583 to 6605 feet. After the hole was drilled to 6632 feet an electrical log showed 46 ohms in the oil sands. Seven-inch casing was landed on top of the sand and 46 feet of slotted pipe was set. Superior has made location for Dorisse Kaough 1, 650 feet north and 200 feet east of the SWc SE of Section 30-12s-10w.

Stanolind Oil & Gas Company will drill another well on the Intra-Coastal block in Vermilion Parish. Location has been made for Fred Stovall 1, 9000 feet northeast along the northwest bank of Intra-Coastal Canal from its intersection with the east bank of Vermilion Bayou, thence 300 feet northwest at right angles in Section 88-14s-3w. The company drilled Fred Stovall 1 to 12,128 feet and abandoned it in January, 1937.

On the Henderson salt dome, St. Martin Parish, The Texas Company is trying to drill through salt to establish the area as a "mushroom" type salt dome. St. Martin Land Company 11 was drilling salt at 9404 feet, topped at 8904 feet, last week.

Also in St. Martin Parish, The Texas Company's State Lake Mongoulois 6, Lake Mongoulois salt dome, was drilling at 7184 feet in water sand.

Shreveport.—Twenty-one drilling permits were authorized last week by the Louisiana Conservation Commission, of which 15 were in North Louisiana, divided among the following parishes: Caddo 7, LaSalle 1, Morehouse 1, Sabine 3, Webster 3. The 6 in South Louisiana were divided among the following parishes: Acadia 2, Avoyelles 1, Evangeline 1, LaFourche 1, St. Mary 1.

Houston Technical Club meets on August 29

The regular monthly meeting of the Houston Technical Club will be held Monday evening, August 29, at 6:30 p.m., according to O. A. Schilling, secretary of the organization. The meeting will be at the Ben Milam Hotel. Entertainment as well as dinner is promised for members and their friends.

JOSEPH K. ROBERTS, assistant to Bruce K. Brown, general manager of research and development of Standard Oil Company of Indiana, has been promoted to director of research, President Edward G. Seubert has announced. Under Brown's direction, Roberts will supervise research activities at refineries at Whiting, Indiana; Wood River, Illinois; Sugar Creek, Missouri; Casper, Wyoming, and Neodesha, Kansas. Dr. F. W. Sullivan, Jr., who is at present director of research at Whiting, has resigned, effective October 15.

Roberts joined Standard Oil in 1928 as a chemical engineer at Whiting, after receiving his master's degree from the Massachusetts Institute of Technology and bachelor's degree from the University of Kentucky. He was promoted to assistant director of research at Whiting in 1934 and assistant to the general manager of research and development at Chicago in 1938.

Roberts is a member of the American Chemical Society and American Institute of Chemical Engineers.

North Louisiana Fields

Temporary order fixes spacing for new Shreveport area. Lisbon production again extended half-mile southwest.

Shreveport. — A temporary spacing rule for the new field opened July 15 adjacent to the city of Shreveport by R. E. Allison's Ellerbe 1, SW NW 27-18n-14w, in basal Glen Rose lime, provides for drilling on 10-acre tracts inside the city limits of Shreveport and in its immediate suburbs. Forty-acre spacing will be followed except in the city limits and suburbs, and it was announced that wells on 10-acre tracts will be prorated on the basis of the larger spacing. The allowable will be based 75 percent on acreage and 25 percent on bottom-hole pressure.

The matter of spacing for the new field, especially as it affected tests inside the city limits, has been a subject of controversy since the discovery well was completed, and up to August 25 no permits had been issued, although locations had been made for three new tests in the area. The official spacing rule for the Shreveport field was expected to have been issued during the week-end.

The Lisbon field, Claiborne Parish, was extended ½ mile southwest last week and to within approximately the same distance of a small outpost producer between Lisbon and Sugar Creek fields, completed in the early days of Lisbon. The connecting or extension well just completed is Rodessa Oil & Gas Company's Sallie Lloyd 1, SE SW 10-20n-5w, completed at 5362 feet after logging 11 feet of saturated basal Glen Rose lime. Its initial flow was 15 barrels hourly through choke without use of acid, and on 24-hour gauge it averaged 11 barrels per hour through 20/64-inch choke. Two recent dry holes on this side of the field in Section 14-20n-5w had tended to slow up drilling in that part of the field, which was recently defined to the northeast.

Rodessa Salt Water

The salt water table for the Rodessa field as of August 15 shows a total of 260 of the field's 1030 wells producing varying amounts of salt water. These wells making salt water are divided in the various parts of the field as follows: Arkansas (Miller County), 7; Louisiana (Caddo Parish), 134; Texas 117, with 80 in Cass County and 37 in Marion County.

North Louisiana's first unitized field, that at Sugar Creek, where approximately 8000 acres are held by Standard Oil Company of Louisiana, Union Producing Company and Sugar Creek Syndicate, is meeting with some trouble as to renewal of expiring leases on some of the units, land-owners being disinclined to renew the leases, where no development has taken place, unless smaller units are promised as well as early drilling is guaranteed.

Operators claim that to date deep production has not been profitable, especially in the Travis Peak which has proven erratic. Daily average oil production in that horizon there is about 325 barrels. The major part of production, which is gas-distillate, is in the Glen Rose at 4300-4500 feet. Two deep tests have been dilled, neither of which was completed as a commercial well below the Travis Peak, one going to 8616 feet and plugging back to the Travis Peak after mechanical trouble, and the other drilled to 10,560 feet, having been found to have crooked hole. It has been temporarily abandoned. Both are said to have logged numerous showings below the Travis Peak.

Possibility of the Bodcaw ("E" sand) of the lower Marine producing oil on the northwest flank at Cotton Valley, Webster Parish, was seen last week at North American Consolidated Oil Company's W. M. Burrow 1, C NE NW 21-21n-10w, which set final casing string, with total depth of 8725 feet. With elevation of 240 feet this test logged top of the "C" sand at 8522 feet and logged oil and gas saturation in the "E" sand at 8668 to 8696 feet. Considerable leasing continues around the flanks of Cotton Valley. West and southwest of Cotton Valley, Stanolind Oil & Gas Company has had a seismograph unit working recently.

R. E. Allison, who drilled the discov-

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anse La Butte—		
Mary G. Thomas, Broussard 1....	*	1792
Bayou Des Allemands—		
Amerada, State 4 (td 9914 ft) ...	144	9463
Gibson—		
Shell, Pelican 7	994	9502
Jennings—		
Iles Pet. Corp., Syndicate 2.....	400	2016
Lirette—		
Fohs Oil Co., State Bay Baptiste (td 13,409 ft)	55	11,178
New Iberia—		
Harry Fotiades, Gulf 5.....	300	4520
West Hackberry—		
Stanolind, Keough 1	244	3060
Terrebonne Parish—		
Shell, Realty Operators C-1, Minor, 10-18s-16e	*	11,208

*Failures; †Junked; ¶Million cu. ft. gas

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Claiborne Parish (Lisbon)—		
Rodessa O&R Co., Lloyd 1, 10-20n-5w	480	5362
Texas Canadian Oil Co., Patton B-1, 12-20n-5w	700	5282
Webster Parish (Cotton Valley)—		
H. L. Hunt, Bodcaw Lbr. Co. 2, 33-21n-10w	360	5730
J. F. Davis 1, 23-21n-10w	39	6000

*Failures; †Junked; ¶Million cu. ft. gas

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SHREVEPORT LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe
Cotton Valley—Greggton
Houston

ery well of the Shreveport field in Section 27-18n-14w, was awarded a lease on 77.31 acres of state land in Section 28-18n-14w, ½ mile southwest of the discovery well. Allison's bid was $3000 with the state retaining 1/6 instead of 1/8 royalty, plus $50,000 from additional 5/24 royalty, the first well to begin within 30 days or payment of $20,000 forfeit.

Ohio Oil Company and Gulf Refining Company continue to add to their holdings southwest of the old Haynesville shallow field in Claiborne Parish, the leases being acquired in southwest part of Township 23 North, Range 8 West. Gulf Refining Company and Tide Water Associated Oil Company continue to lease actively in Townships 20 and 21 North, Ranges 14 and 15 West, Caddo Parish, near the old Pine Island field. Harmon and associates of Monroe, who several months ago assembled a block around Section 18-19n-1e, Union Parish, have added 1300 acres of Federal Land Bank land to their block, having acquired this in fee. In Bienville Parish H. C. Miller is buying leases around Section 28-17n-7w, and in the same parish J. C. Palmer is taking 10-year leases around Section 16-16n-9w. Some leasing is going on around the Dubberly field in Township 18 North, Range 8 West, Webster Parish.

FRED A. MILLER, 70, prominent in the natural gas industry and until May 27 president of the S. R. Dresser Manufacturing Company, died August 22 of heart disease in Bradford, Pennsylvania. On his retirement, directors of the company named him honorary chairman. Surviving are his wife, a son and two daughters.

Arkansas Fields

Schuler producing limit defined on southwest

El Dorado, Ark.—The southwest limits of the lower Marine and Permian lime producing horizons of the Schuler field, Union County, apparently were defined last week by the first dry hole in these lower horizons when Edwin M. Jones and associates' C. H. Murphy 1, NWc Lot 6, NW 19-18-17, failed to pick up saturation to 7764 feet and was abandoned. The test was a half-mile southwest of nearest production and checked 75 feet low on top of the Jones (lower Marine) sand as compared to the nearest producer. In the abandoned test Jones sand was logged at 7632 feet, with elevation of 262 feet.

A pattern for development of Section 12-18-18 in the northwest end of Schuler just outside present producing limits is being followed by agreement of lease owners. Under the plan in that section one well will be drilled on each 20 acres, in the center of the 20.

Joe Modisett abandoned a wildcat in Union County near Strong on a geophysical prospect. The test abandoned at 6505 feet was Frost Lumber Company 2 (Union Sawmill fee), NE NE 8-18-12.

Modisett's test, with elevation of 184 feet, topped Permian lime at 6061 feet and topped the porous section of the lime at 6067 feet. Penetrating the lime section to 6505 feet, it failed to pick up any saturation.

Water Reduced

Standard Oil Company of Louisiana, after making a second test of Tina Crumpler 1, C SW NW 15-17-19, west offset to the discovery well at Village, Columbia County, which showed a reduction in amount of salt water from 65 to 33 percent, later tried squeeze. Total depth is 7500 feet. On the most recent test before the squeeze job was atempted the well flowed 34 barrels of fluid hourly through ¼-inch tubing choke with casing pressure 1100 pounds and tubing 730 pounds.

Fohs Oil Company, after shutting off salt water in W. P. Phillips 1, NW NW SW 15-17-19, completed the well gauging 145 barrels in 24 hours. It had previously shown salt water.

Tide Water Associated Oil Company last week made location for a test in C SE NW 15--18-19, Columbia County, on a wildcat block of 3000 acres it recently acquired.

The Texas Company added 250 acres to its holdings in Sections 1 and 2-19-12, Union County, and Gulf Refining Company leased 110 acres in Section 36-18-12, same county.

Six Permits

Six drilling permits were authorized last week by the Arkansas Board of Conservation, as follows: Nevada County—Paul D. Bowlin's J. M. Stocks 1, 330 feet south and 380 feet west NEc SW SE 9-15-22; Union County (Schuler)—P. G. Lake's Burns 1, 210 feet west and 105 feet south NEc NW SE 20-18-17; Phillips Petroleum Company's Alice Nelson 2, 330 feet south and east NWc Lot 3, NW 19-18-17; El Dorado 1, 330 feet north and 660 feet east SWc NW SE 12-18-18; B. Brian 1, 330 feet south and 660 feet east NWc NE SE 13-18-18; Milling 1, 330 feet north and west SEc south half Lot 4, SW 18-18-17.

ARKANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia Village)—		
Fohs Oil Co., Phillips 1, 15-17-19..	145	7424
Miller County (Rodessa)—		
Gehrig Co., Mitchell 1, 2-20-28 ..	1000	6172
Union County (Schuler)—		
Jones, Murphy and Hurley, Murphy 1, 19-18-17	*	7785
Union County (Wildcat)—		
Modisett et al, Union Sawmill 2, 8-18-12	*	6505

*Failures; †Junked; ¶Million cu. ft. gas

Mississippi fire out

Jackson.—Rankinside Development Company's blazing gas well on the Rankin County (east) side of the Jackson gas field which became ignited from an explosion August 14 was extinguished Thursday, August 25, after a crew under direction of A. L. Patton of Houston extinguished the blaze by placing a manifold over the casing.

The well, which was 600 feet from the nearest other gas producer in the field, was burning an estimated 55 million feet of gas daily and threatened to draw salt water into more than 50 wells on the east side of the field.

The Mississippi state legislature had passed a bill making a special appropriation for extinguishing the flames.

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California Fields

Deep test has fishing job just above objective formation. State offers leases on 800 acres off Huntington Beach.

Los Angeles.—Midway between Wasco discovery well and Rio Bravo, Continental Oil Company's KCL C-1, which had attained a depth of 12,778 feet, continues tied up with a fishing job just above the point at which the producing horizon is anticipated.

In the meantime, Continental is making good progress in San Miguelito field, north of Ventura Avenue, where it is drilling the ninth test on the Grubb 1000-acre block. Eight wells have been completed on the lease, Associated Oil Company taking the crude which runs 33 and 35 gravity. Southern California Gas Company takes most of the dry gas.

Ed McAdams, starting a new venture under the banner of the Petroleum Drilling Company, will prospect a portion of the McNally ranch in the Carmenita area, east of Los Angeles. Drilling operations are scheduled to get under way within 60 days with the possibility that it will be a deep test in Section 15-3-11, Los Angeles County. The lease is two miles from Standard Oil Company of California's productive Murphy-Coyote lease. McAdams one time set a world's record for deep holes northwest of Kettleman Hills North Dome when he drilled the Lillis & Welsh wildcat to a depth below 11,200 feet.

Since coming in on the pump a week ago for 560 barrels, Standard Oil Company of California's Las Flores 1, Santa Maria Valley wildcat, has stepped up production to 760 barrels of 14.9 gravity oil, with a cut of 0.1 percent. The company expects to permit the well to pump for a month or so and may decide to deepen it to the Shiells sand that had previously been developed in Shiells Canyon by Shell Oil Company.

It is rumored that the Las Flores discovery indicates the existence of a flat bed of Monterey shale extending 1½ miles east into Cat Canyon and perhaps five miles to the southeast into Cat Ridge field. There is a possibility that a deal may be announced to the effect that a major company has purchased all of the Petrol Corporation's holdings at Gato Ridge that would include some 1600 acres of proven property.

In the meantime, trucks are coming to the rescue of operators who had trouble getting an outlet for Santa Maria Valley field oil. They are taking crude from the Beacon portion of this coastal field to the Petrol marine loading station at Point Sal, where shipments of the asphaltic crude are being made to Italy. Some have estimated that trucks are handling close to 12,000 barrels daily, while Petrol is reportedly taking around 10,000 barrels daily from Gato Ridge field by truck.

Barnsdall Oil Company's Trust 5, recent completion in Rosecrans field, is rated at 1600 barrels of 33 gravity oil per day from 7802 feet. Derrick has been skidded to site of Trust 6, which is slated to get under way within a week to test the same formation. Republic Petroleum Company's Trust 1, on the west side of Figueroa, will be deepened from 6141 feet, where it yielded 65 barrels daily.

CALIFORNIA Completions

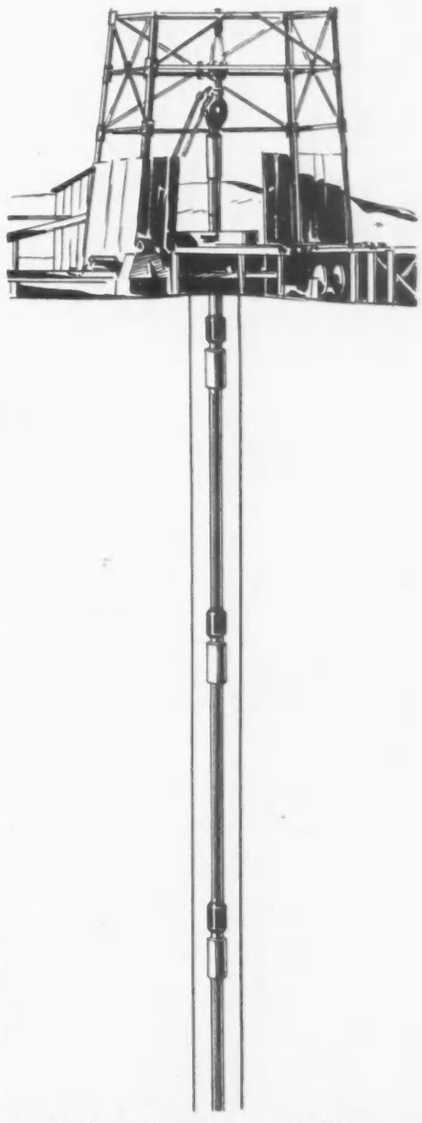
Company, Well and Location	Init. Prod. Bbls.	Depth
Athens-Rosecrans—		
Superior, Maxwell Comm. 9	1030	7658
Dominguez—		
Union, Callender 58	60	7549
Hellman 46	259	5290
Montebello—		
Standard, McDonald 1	550	6245
Union, Paul Howard 2	267	5489
Torrance—		
W. P. Andrews, Lomita 12	535	4990
Imperial Gypsum, No. 2	100	5059
W. E. McCaslin, McCaslin 2	250	5023
Morton & Elder, Ritzer 1	450	4975
Packard Petroleum, Lomita 3	500	4950
Henry Wertella, No. 1	345	4960
Wilmington—		
Crail Brothers, McAllister 1	120	5745
Hancock, Harbor (LB) B-12	2500	4048
Harbor (LB) C-25	400	3020
Richfield, Pacific Dock (LB) 9	3000	3636
Tide Water Assoc., Banning 1	400	6761
Union Pacific, UP (LB) 89	493	2825
V. R. G. Wilbur, Santa Fe 3	135	3714
Yorba Linda—		
Richfield, Todd 2	125	1760
Greeley—		
Standard, KCL 11-15	680	7735
Kern Front—		
Barnhart-Morrow Cons., KCL 6	65	1735
Kern River—		
Hast Oil Co., Kern 4	14	345
Midway-Sunset—		
Signal, Kendon 5	130	2182
Rio Bravo—		
Geo. F. Getty, Ramsey B-2	6960	11,539
Superior, Geisinger 3	2065	11,500
Casmalia-Cat Canyon—		
Standard, Los Flores 1	560	6556
Richfield—		
Shell, Hemphill 1	*	3101
Torrance—		
Young & Bryan, Lomita 1	*	5025
Lerdo—		
Standard, KCL 18-1	*	10,499
McFarland—		
Tide Water, Pond 1	*	9190
Canfield Ranch—		
Standard, KCL 15-2	*	8522
Gaviota—		
Wilshire, Hollister 1	*	4600
Refugio—		
A. E. Tweedy, Penn 1	*	2324
Santa Maria Valley—		
Union, Wheat 2	*	3945

*Failures; †Junked; ¶Million cu. ft. gas.

California asks bids on Huntington Beach tidelands

Los Angeles.—Bids for the development of oil underlying tidelands at Huntington Beach will be received up to noon September 1, according to a ruling announced by the California lands commission. Bids have been asked on any one or all of five parcels which embrace 800 acres.

A graduated schedule of royalties on which interested parties will be asked to bid, has been worked out by the commission. Bidders will submit bids in the form of a mathematical formula which will determine the royalty he is willing to pay on various size wells, 12½ percent to be the minimum. The royalty formula corresponds to the declining curve on an oil well, inversely applied.



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Illinois Developments

Lake Centralia field extended 1¾ miles northwest.

Northwest and south outposts expand Olney.

Wayne County wildcat cores McClosky saturation.

Olney, Ill.—Extensions to the Lake Centralia, North Olney and St. Elmo fields, an indicated pool opener in Wayne County and abandonment of several scattered wildcat tests featured Illinois oil activity last week.

Lake Centralia, Marion County, recently opened by The Texas Company's Tate 1, was extended 1¾ miles northwest by C. Shephard et al's C. Greer 1, Section 30-2n-2e, Salem Township. The well recovered a 6-foot saturated Benoist sand core at about 1900 feet and was to be cored deeper before being completed.

Carpenter & Goldberg's E. E. Holsapple 1, Section 25-1n-1e, Odin Township, ¼-mile northwest of the Greer well, was at 1900 feet, but information as to its outlook was withheld by operators.

Eddie Self's H. F. McRoberts 1, Section 32-2n-2e, Salem Township, which a week ago indicated a ¾-mile north extension, ran 7-inch oil string to 1729 feet and, when the plugs were drilled, flowed 60 barrels in the first 30 minutes. It continued to flow by heads and was rated as a 1000-barrel producer.

Two Outposts Good

In the North Olney field, extensions were made to the northwest and to the south, the latter test bringing the field to within a quarter mile of the Olney city limits. J. V. Wicklund Development Company's R. Sager 1, Section 22-4n-10e, took a well-saturated McClosky core from 3034-3041 feet and was deepening through the formation with cable tools. The hole filled up well with oil and a good gas pressure was indicated. It is to be acidized and completed when the McClosky bottom is reached. The south extension was Sylvester et al's Mrs. M. Osborne 1, Section 26-4n-10e, south offset to F. Mitchell et al's A. Bunn 1, which started at 750 barrels a day. The Osborne 1 cored 8 feet of excellent McClosky, had casing set and was to drill in late in the week.

The near completions promise to bring to 14 the number of producing wells in North Olney, the 12 already completed producing in excess of 500 barrels a day each. Three dry holes were drilled in the area, all clustered up in a 10-acre area in the northeast end of the field. Four drilling wells, 1 setting surface pipe, 3 with derricks up and 2 locations complete the picture in this field.

Wayne County Showing

In Wayne County, Sloan et al's (Iroquois Oil Company) P. Walker, Section 16-3s-9e, Leach Township, near the Edwards County line, reported an 8-foot McClosky saturation which was being tested. A saturation in the Aux Vasse had been passed through on the way to the McClosky.

The St. Elmo field extension was Ray Brown's Steinbrink 1, Section 12-7n-2e, ½-mile west of production, which cored 8 feet of saturated Stein sand.

In the Richland-Clay-Wayne County area, 54 tests were active late last week, making the largest activity in this Basin section for the present season. The Clay City Township field, now 5 miles long, dominated the play with its 15 Pure Oil Company wells, while the remaining tests were scattered over 12 areas. Eight wells were in the final stages before completion, 29 were drilling, 13 had derricks up or were installing rigs, and 4 were preparing locations. Production in this area is from the McClosky sand, found at about 3000 feet.

Fayette County Failures

An attempt to extend the Eastern Fayette County field several miles to the south failed last week when McDavitt & Youngblood's W. A. Miles 1, Section 10-6n-3e, was abandoned at 1920 feet. Another failure in this area was J. B. Whisenant et al's Carter 1, Section 14-4n-1w, bottomed at 1460 feet.

Continental Oil Company's W. C. Eveland 1, Section 33-7n-9e, Wade Township, first test to be undertaken by the company east of the Mississippi River, was dry at 3250 feet and abandoned. It had drilled through the Benoist and McClosky sands and the St. Louis lime. The only other test in this county, Kingwood et al's J. Harrison 1, Section 2-7n-10e, Hunt City Township, is a derrick.

South of Charleston in southern Coles County, Kingwood drilled a test to 6000 feet, the St. Peter formation, and abandoned it as dry. Several months ago this company drilled a deep test in southwestern Effingham County that met the same fate.

Near Centralia field, Gill & Crosby's Smithey 1, Section 6, Grand Prairie Township, 3 miles south of the city of Centralia, was plugged after an unsuccessful test of the Petro sand at 1051 feet. The well had been drilled to the McClosky and plugged back to the Stein sand before the test of the upper Petro was made.

Area's Deepest Abandoned

Pennsylvania-Illinois Oil Company's Nichols 1, Section 22-4n-2e, 6 miles east of Patoka, Marion County, deepest test to be drilled in that area, was abandoned at 2100 feet.

In Washington County, Thompson Drilling Company's J. Musial 1, Section 19-3s-1w, DuBois Township, 28 miles south of Centralia, was deepened from the Stein sand where a fair saturation was found and was setting casing to shut off water at the top of the Benoist sand at 1361 feet. Bottom is at 1364 feet. This well, which had taken production from the Stein sand before the decision was reached to deepen, opened a new pool early this month. One and one-half miles east of the St. Clair County line in this county, C. E. Lange et al's R. Paul 1, drilling at 850 feet, will be made a deep test if satisfactory production is not obtained from the upper sands.

Outstanding among announcements for new tests was Pure Oil Company's F. L. Wakefield 1, Section 26-4n-9e, Northeast Noble Township, Richland County. It is 2 miles east of Mammoth Producing & Refining Company's Heitz wells in Section 34-4n-9e, and 1½ miles from a dry hole in Section 27-4n-9e.

ILLINOIS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clark County—		
Stipes et al, Daughtey 2	•	425
Clay County—		
Pure, Wilkins 10	270	3025
McKinney 5	81	3048
McKinney 6	85	3041
Wiser Oil Co., J. Daly 1	195	3085
Carter, Neeley 1	172	2993
Gulf, Pierce 1	47	2977
Clinton County—		
Shell, Criley 4A	103	1215
Allison 8	62	1375
W. C. McBride Oil Co., Allison 2	77	1386
Adams O&G Co., Coppel 2	63	1214
Hausman et al, Nothans 1	•	1528
American Seismograph, Hawkins 1	•	1389
Fayette County—		
Minerva Oil Co., Tish 3	425	1591
W. C. McBride, Inc., Stokes 1	350	1532
Stokes 1B	•	1757
Carter, Logsdon 5	265	1505
Dove 4	235	1491
Fortner 1	80	1600
Kingwood & Duncan, Yolton 1	109	1597
W. B. Johnson, Goetting 1	80	1545
Finley & Greer, Tarbeck 1	•	1919
Marion County—		
J. G. Wanner, Raccoon School 1	900	1725
Mammoth Producers & Refiners, Bachman 1	100	1856
Taylor Drilling Co., Gray 1	88	1376
W. B. Frost, Home Building & Loan 1	75	1383
Adams O&G Co., Cox 1	71	1437
Cole & Simmel 1	•	837
Richland County—		
Pure, Van Matre 1	657	3120
Greeson 1	•	3100
Texas Co., Zirkle 4	250	3074
Shelby County—		
Borah et al, Patten 1	•	1886

•Failures; †Junked; ¶Million cu. ft. gas

Charleston, W. Va.—A slight increase in West Virginia drilling activity was experienced in July when permits issued by N. P. Rhinehart, chief of the state department of mines, climbed to 59 from the previous month's total of 56. The past month's permits, however, continued running far behind last year, when 111 were issued during the corresponding month.

During the first six months of this year, 364 permits were issued, a drop of 241 or 39.8 percent from the corresponding period a year ago.

Kanawha County, center of Oriskany deep sand gas exploration, led the field last month with 12 permits. Permits issued for tests in other counties are: Boone 3, Braxton 1, Cabell 5, Calhoun 3, Clay 2, Doddridge 4, Gilmer 4, Hancock 1, Harrison 1, Lewis 2, Lincoln 1, Marshall 1, Mason 1, Monongalia 1, Pleasants 3, Putnam 2, Ritchie 3, Roane 3, Tyler 1, Wayne 1, Wetzel 2, Wirt 1 and Wood 1.

Fifteen carloads of equipment are needed to drill and complete a modern oil well—a need that gives thousands of jobs to workers outside the petroleum industry.

Eastern States

New outlets increase runs from Birk City field.

Daviess County contributes largest well of week.

Salt water drowns out McClosky sand near Corydon.

EASTERN STATES

Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens County—		
C. W. Nuzum, Niggemeyer 1	¶.65	1053
McCune & Gross, Burson 1	*	450
C. J. Ross et al, Ackley 3	*	406
Guernsey County—		
Jones & Jewell, Brumbaugh 1	5	1219
Licking County—		
J. P. Gordon et al, Moran 4	100	3060
Walker & Hodge, Martin 1	40	3073
Lacknett et al, Mauk 1	10	750
Armbruster & Stricker, Wright 1	¶.18	....
St. Albans, Dr. Co., J. Keaser 3	¶.15	750
Rutledge & Mosholder, Berger 2	*	869
Ohio F. S. Co., Shartle 1	*	2745
Lorain County—		
Edson & Son, Stegman 1	*	2380
Medina County—		
Preston Oil Co., Severcool 1	5	383
Meigs County—		
Joe Rubin, O'Brien 1	*	1010
Monroe County—		
Barnsville Dev. Co., Huff 1	¶	1899
Sunsbury O&G Co., Skinner 2	*	1679
Morgan County—		
Kepple, McDaniel 1	*	1731
Muskingum County—		
Preston Oil Co., Morrison Hrs. 1	10	4367
Nobel County—		
Wm. Patton, Hutchins 1	*	1027
Perry County—		
Preston Oil Co., Sunday Creek 162	5	3650
Seneca County—		
West & McPharon, Saul 1	¶	1447
Washington County—		
McTaggart, McFarland 2	¶.14	992

WEST VIRGINIA

Cabel County—		
Mountaineer Gas Co., Nelson Hrs. 1	¶.55	3357
Gilmer County—		
McCall Drl. Co., Snyder 1	3	2083
Kanawha County—		
Valley Gas Co., Harless 4	¶.30	2050
Lewis County—		
McCall Drl. Co., Rinehart Hrs. 2	10	1888
Lincoln County—		
Roy & McComas, Adkins et al 1	¶.13	3472
Logan County—		
Boone County Coal Co., Fee 11	¶.90	3410
Pleasants County—		
Steele & Gallagher, Gallagher 9	*	1455
Ritchie County—		
Border O&G Co., Border Hrs. 1	3	1481
Roane County—		
American Oil & Dev. Co., Conley 5	20	1625
Hope Natural Gas Co., McMillan 7817	*	1805
Wayne County—		
A. D. Adkins, C. Fraley 1	¶.04	3128
Wetzel County—		
Daniel Henthorn, Phillips 1	¶.15	570

KENTUCKY

Butler County—		
Porter Evans et al, Harper 1	5	176
E. V. Harper 1	*	200
Hupp et al's Harrison 1	*	195
Cornell et al, Tanner 2	*	868
Daviess County—		
Hupp et al, Taylor 2	250	1881
Ellis & Ashby, Howard 13	15	....
Elliott County—		
C. M. Nicholas, Isom 3	5	....
Hancock County—		
Mayers et al, Stewart 14	¶.35	....
Lee County—		
Central States Oil Co., Shoemaker 7	20	1260
McLean County—		
Mace et al, Howell 3	40	1160
Martin County—		
Kentucky-W. Va. Gas Co., Preece 5244	25	1345
Virginia G&O Corp., Parks 3	2	1348
Preece 1	*	....
Ohio County—		
Stewart et al, Wells 7	5	....
Young et al, Coleman 3	5	587
Callas et al, Shaver 1	*	2330

Pittsburgh, Pa.—Completion of two short lines in the Birk City field of Henderson and Daviess counties, Kentucky, by the Fordsville Gathering Lines, Incorporated, last week stepped up movement of crude by that purchaser from 3400 to 4600 barrels daily. The crude is piped to Stanley, where it is pumped into tank cars for movement to refineries at Lexington, Louisville and Cincinnati. Aetna Oil Service Company is handling about 1000 barrels a day from the new field, piping it to the Green River where it is transferred to barges for shipment to Louisville.

Several completions and near completions were recorded in the booming Birk City area last week, largest of which was Major Oil Company's Sanders 1, on the Daviess County side, which pumped at the rate of 25 barrels an hour. Bottom was at 1875 feet, of which 15 feet was McClosky sand. This company's G. Morrison 1 had oil 700 feet in the hole when drilled 5 feet in the McClosky. Carter Oil Company's Hagan 1, which first reported the McClosky dry, pumped at the rate of 400 barrels a day after a shot.

Snowden & McSweeney and W. E. Hupp et al's Taylor 3, also on the Daviess County side, had oil standing 1100 feet in the hole and was preparing for acid treatment, while Sun Oil Company's W. S. Calhoun 1 had oil standing 1500 feet in the hole.

On the Henderson County side, the C. T. Blackwell 7, on the discovery lease, was being drilled in by the Birk City Oil Company (Hoosier Drilling Company). Indications are that it will make a good producer. Closely watched as furnishing a possible 2-mile northerly extension to the field is Miller & Shiarella's Rash 1, which encountered the McClosky at 1900 feet last week.

A. R. C. Drilling Company's Duncan et al 1 encountered 15 feet of Jackson sand saturation at 1505 feet which was estimated capable of yielding 50 to 75 barrels a day. The well was continuing to the McClosky, where larger production is expected. If completed as a McClosky sand well, another may be drilled to the Jackson sand close by. The lease is not large enough to accommodate 2 McClosky sand wells. It is on the Daviess County side.

PENNSYLVANIA

Company, Well and Location	Init. Prod. Bbls.	Depth
Greene County—		
Mong et al, Weir 3	¶1.00	3122
Potter County—		
G. L. Cabot, Whitney-Duke 1	*	5260
Bradford District		
Grant & Mohan, 486-7 Bing	2	....
Hardy et al, Corwin	2	....
Ryder Scott Co., Fee	3	....
Forest Oil Corp., 3 wells	3	....
Niagara Oil Corp., 7 wells	7	....
Bradford Transit Co., 11 wells	11	....
Bradford: Water (Pressure) Wells		
Mix Creek Oil Co., Fee	...	....
Forest Oil Corp.	...	....
Niagara Oil Corp.	...	....
Forest Petroleum Corp.	...	....
Butler-Armstrong District		
G. L. Yates, U. P. W. Home Ass'n	*	....
Bergbichler et al, Neigh	1	....
Middle District		
Morck Oil Co., Chamberlain	1	....
Anderson et al, McElroy	1	....
W. E. Fertig, Kehr	2	....
Fryburg Motor Co., Deets	1	....

*Failures; †Junked; ¶Million cu. ft. gas

Wildcat Abandoned

Sun Oil Company and Kentucky Natural Gas Corporation's Trigg 1, wildcat 2 miles northwest of Corydon, Henderson County, was deepened to 2880 feet, when salt water drowned out the McClosky at 2655 feet, and then abandoned. Operators indicated another test on this tract would be started next month.

Near Spottsville, Magnolia Petroleum Company's S. L. Green 1 passed through a good saturation in the Jett sand at 920 feet but was continuing on to the McClosky. Being drilled with cable tools, it was at 1525 feet at last report.

In Hopkins County, Kentucky, Hunsaker, Hobbs & Campbell announced they soon will start two wells, in addition to one they are now drilling near Madisonville.

Indiana's Deepest Salty

Carter Oil Company's C. Graulich 1, Section 4-7s-14w, Black Township, Posey County, Indiana, after drilling to 5035 feet, was shot between 2485 and 2599 feet in the Bethel sand, but flowed only a stream of salt water. Fate of the test, which is the deepest to be drilled in Indiana, has not been announced.

A dry hole in Potter County, Pennsylvania, was the sole completion in the New York-Pennsylvania deep sand gas area. G. L. Cabot, Incorporated's Whitney-Duke 1, Bingham Township, topped the Oriskany at 5255 feet and was abandoned 5 feet in the formation because of a heavy flow of salt water Wasson et al's E. S. Collins 1, wildcat in Howe Township, Warren County, had Oriskany sand at 5193-98 feet, but it was dry. It is to be deepened to the Medina, expected at about 6900 to 7000 feet. Bottom is now at 5250 feet.

One mile north of production in the Oriskany area centered in Kanawha County, West Virginia, United Carbon Company's E. W. Perkins 3, Washington District, Jackson County, had 6,000,000 cubic feet of gas at 5238 feet, 8 feet in the Oriskany sand. The Corniferous lime was topped at 5102 feet.

Completed operations in the Eastern States area gained sharply last week in Ohio, remained constant in Kentucky and dropped slightly in West Virginia and Pennsylvania. The net gain was 7 wells. Ohio wells increased from 12 to 22, the past week's list including 7 oil wells averaging 25 barrels daily initial production, 7 gas wells and 8 dry holes. Kentucky operations remained constant at 16, which included 10 oil wells averaging 37 barrels, 2 gas wells and 4 dry holes. A drop of 2 to 12 was recorded in West Virginia, of which 4 were oil wells averaging 9 barrels initial, 6 were gas wells and 2 were dry holes. Pennsylvania dropped from 3 to 2, being an average gas well and a dry hole.

New Mexico Fields

Lease requirements keeping Lea County drilling active. Vacuum completion will require many progressive offsets.

Hobbs, N. M.—Locations forced by producing offsets and lease expirations are enabling Lea County to maintain a steady drilling program in the face of threatened cut in production allowables. Ten new operations were authorized for the county the past week as compared to 12 in the previous week, and the majority of these will in turn require offsets. Crude purchasers that serve Lea and Eddy Counties are curtailing their nominations, and pipe line proration, amounting to 50 percent, has been applied by the largest buyer in the latter county.

A major extension for the Vacuum field was in prospect late last week when Phillips Petroleum Company's State-Santa Fe 7, C SE SW 27-17s-35e, 1¼ miles southeast of its outpost producer, awaited production test at 4610 feet. Broken lime pay was considered favorable for a producer. Magnolia Petroleum Company's State 1-L, C SE SW 21-17s-35e, west offset to the above company's previous extension well, logged oil shows at 4513-18 feet and 4554-66 feet.

An unusual number of progressive offsets will follow the successful completion of Humble Oil & Refining Company's State 1-1-C, SW SW 19-17s-35e, a new project for the northeast edge of the Vacuum area. Lease ownership to the west and south is divided in such a manner that each completion will call for one or more offsets. Forty-acre unit spacing is used throughout the field. Shell Petroleum Corporation has made location for State 1-E, C SE SW 31-17s-35e. The Texas Company's State 1-R, southeast edge of field, flowed 117 barrels natural in 4 hours for completion in lime at 4675 feet.

Natural flow of 44 barrels hourly through ¾-inch choke was recorded by Continental Oil Company et al's Reed 6-B-23, NE SW SE 23-20s-36e, minor extension for the northwest sector of the Eunice field. Production is from lime at 3810-23 feet. H. J. Schafer et al's State 1-A, located less than ½ mile to the south, failed to make a commercial well after multiple acid treatments and nitro shot at a plugged-back depth of 3845 feet.

Recent development of prolific oil production in semi-wildcat territory between the Eunice lime and the Penrose sandy-lime areas has attracted two new projects. Continental Oil Company's State 2-J-2, C NE SE 2-22s-36e, and Lockhart 1-B-1, C SW NW 1-22s-36e, have rigged up to match a single offset. In the Penrose area, The Texas Company's Falby 3-Q, C SE NW 8-22s-37e, flowed 92 barrels of oil in 22 hours after 2-stage acid treatment at 3740 feet. This field was assigned 3 new tests, including Lem Peters et al's M. W. Coll 1, NW SW SW 26-22s-37e, and L. J. May-Gulf 4, SW SE NE 27-22s-37e, which were drilling at 1900 feet, and rigging up tools, respectively. Skelly Oil Company made location for B. L. King 1-B, C NE SW 33-22s-37e.

Jas. Mascho et al's Cloyd-Conoco 2, southwestern Lea County Delaware prospect, was drilling sand and anhydrite at 3892 feet. Tide Water Associated Oil Company's State 1-L, Tatum area wildcat, was drilling hard lime at 4630 feet. Continental Oil Company and Helmerich & Payne Inc.'s State 1-K-29, located on a northwest trend from the Hobbs field, was abandoned at 5303 feet. In the Hardy sandy-lime area, Two States Oil Company et al's L. G. Hill-Gulf 2-A, C SE SW 31-20s-38e, and Southern Petroleum Exploration Inc.'s Downes 4, C NW SW 32-21s-37e, have started.

den County, in the Lewellen area, Bergman & Bull are moving in standard rig for a test in Section 12-16n-42w.

The Ohio Oil Company and The California Company are building derrick for Kyle 5-A, C NW SE 26-21n-79w, a Sundance well in the Big Medicine Bow field, Carbon County. Meanwhile, joint operators will carry Kyle 3-A, NW NE 26-21n-79w, to granite for a thorough test of the field. Kyle 3 a week ago developed 41 barrels of water per hour in the top of the Tensleep at 7008-7037 feet on drill stem test, and is drilling at 7337 feet in 20 degree dips, still in the Tensleep formation.

First slim hole rotary rig to be employed in drilling in Wyoming is being used by Sinclair-Wyoming Oil Company in Lost Soldier 79, SE NE NE 10-20n-90w, Lost Soldier field, Sweetwater County. The well is drilling at 630 feet with 10-inch casing set at 47 feet, and will complete in the Sundance at 2000 feet. It is first of a series the company is drilling in the old field to the partially developed Sundance formation.

Selegna Oil Corporation of California is cleaning out and preparing to deepen Union Pacific 1, SW SW 11-20n-104w, northwest extension test to the North Baxter Basin field, Sweetwater County, southwestern Wyoming. The test has been shut down for the past three months at 4996 feet in the upper Sundance.

Ohio Oil Company has installed heavy steel derrick to replace the lighter derrick in continued deepening of Trans-Ark 1, C SL SW SW 30-57n-98w, and will drill ahead from 6163 feet. The well is an old gasser from the Frontier series in the Little Pole Cat field, Park County. It was non-commercial in first objective, the Dakota series, later the Sundance, and bottoms in the Tensleep formation.

A possible temporary opening of the crude oil market for the Cut Bank and Kevin-Sunburst fields for the next several weeks is seen as the bumper wheat crop in Western Canada advancing into the harvesting season is creating a shortage of refined products in the Canadian market.

The British-American Oil Company is re-opening its topping plant at Coutts near the International boundary and with direct pipe line connections to the Cut Bank and Kevin-Sunburst fields. The plant was closed down in 1937 and the cracking unit moved out. The cracking unit will not be replaced, and the plant will operate mainly to process tractor fuel. Gasoline and tractor fuel demand in Western Canada is reported at its highest peak in 12 years.

Meanwhile, 3 new wells started in the Cut Bank field. Glacier Production Company staked location for Mather-Unit 1, SW NE SW 36-35n-5w. The Texas Company is building rig for Government 2, NW NE 17-32n-5w, and Santa Rita Oil Company's Lander 3, S SE 16-35n-6w, is a location.

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Rudco O&G Co., Yates 5, ne nw 33-18s-28e	6	2759
Lea County (Hardy)—		
Southern Pet. Explo., Inc., Downes 3, c ne sw 32-21s-37e	250	3778
Lea County (Eunice)—		
Continental et al, Reed 6-B-23, ne sw se 23-20s-36e	800	3823
Lea County (Langlie)—		
Culbertson & Irwin, Dabbs 1, ne ne nw 35-25s-37e	69	3331
Henry 1, c n½ nw sw 26-25s-37e	137	3330
Lea County (Maljamar)—		
Maljamar O&G Corp., Mitchell 4, c ne ne 20-17s-32e	*	4097
Lea County (Mattix)—		
Shasta Oil Co., Woolworth 2, ne nw nw 28-24s-37e	620	3597
Stanolind, Myer 5-B, c ne sw 9-24s-37e	¶18.6	3610
Lea County (Penrose)—		
Texas Co., Falby 3-A, c se nw 8-22s-37e	150	3740
Lea County (Vacuum)—		
Phillips, State-Santa Fe 8, c nw nw 5-18s-35e	588	4637
Shell, State 1-D, c sw sw 31-17s-35e	1280	4690
Texas Co.'s State 1-R, c ne ne 6-18s-35e	458	4675
Lea County (Wildcat)—		
Continental & Herschbach Drl. Co., State 1-K-29, c sw sw 29-16s-37e	*	5303
Todd et al, Lemon-Tidal 1, c nw sw 17-21s-32e (dd)	*	4608

*Failures; †Junked; ¶Million cu. ft. gas

Rocky Mountain Area

Two more wildcat tests started in Nebraska

Casper, Wyo.—Two more wildcats started this week in the Panhandle district, western Nebraska, bringing the total of wildcats in that area to 5 since Union Oil Company of California started its deep test on the Agate anticline in June.

Pawnee Oil Company is moving in rotary for a test in C NW NW 28-18n-31w, Tryon area, McPherson County, 30 miles north of the Lincoln, the state capital, and 15 miles north of the 2 failures drilled near McCook. In Gar-

MOUNTAIN STATES Completions

WYOMING

Company, Well and Location	Init. Prod. Bbls	Depth
Weston County (Osage Field)—		
Bock & Johnson, Fee 1, ne nw nw 31-47n-63w	45	215

*Failures; †Junked; ¶Million cu. ft. gas

Michigan Fields

West side of state continues to hold development interest.

Van Buren County wildcat makes 1100 barrels, 1221 feet.

Mt. Pleasant, Mich. — The western side of the state continued this week as the focal point of the Michigan oil industry as two new districts were opened up by prolific flowing discovery wells. Likewise 15 of the 25 completions came from this part of the state.

Major interest appeared to center on Fisher & McCall's Wiggins 1, SE SW SE 9-1s-14w, Bloomindale Township, Van Buren County, a wildcat which at 1221 feet flowed as high as 32 barrels in 10 minutes open and averaged 51 barrels an hour on a 3-hour open test. It was credited with 1100 barrels initial with no actual 24-hour production gauge made. Operators are producing the well at about 600 to 700 barrels per day, depending on service of trucks hauling the crude 60 miles north to Naph Sol Refining Company's plant in Muskegon.

The first well to produce in Van Buren County, Wiggin 1, is flowing from Traverse limestone, checked at 1220 feet, making it the shallowest production in Michigan.

Like all other districts opened this year in Western Michigan, the acreage expected to be in play is held about 100 percent by independent operators. Five locations had been made up to early week with one machine already drilling on an offset, held by the same operators.

Closest production on the Van Buren discovery is in Trowbridge Township, Allegan County, where four 10- to 50-barrel pumpers have been drilled this year. It is 18 miles south of the Overisel district in Allegan County.

Stepping out three miles northwest of the Diamond Springs district, current hot spot in Allegan County, Stewart et al appeared to have opened another pool on the Overisel-Monterey Traverse structure with the Oldebekking 1, SE SE 21-4n-14w, Overisel Township, developing 52 barrels the first hour and producing 30 barrels hourly pinched for actual runs of about 700 barrels daily. The well was reported slightly lower structurally than producers 3 miles to the southeast in Overizel's Diamond Springs boom. Traverse top was logged at 1477 feet and the hole bottomed at 1478 feet.

Operators anticipate the well has opened another pool rather than an extension to the Diamond Springs district. Developers of the well, Deck Stewart, Burks White and Edward Heasley, had an original spread of 1,000 acres in the block. Gordon Oil Company, Michigan Devonian Oil Company, Swanson Oil Company, Wagner Syndicate, Smith Petroleum Company and Muskegon Development Company are the leading acreage holders.

Indicative of prices being paid in the Allegan district was Swanson Oil Company's $10,000 bid and a quarter override for the north offset 40-acres. While pools in Allegan County have averaged only about 500 acres in extent, comparatively low cost of development in the 1200- to 1600-foot limestone is making the play attractive. Average cost of a well in the Overisel district is $5,500 including tanks and a pump installation. On a dry-hole basis tests have been drilled as low as $1,600. As a result wildcatting and a flood of new operators, many cutting their first teeth in the oil business, is underway. Little drilling activity is taking place in either the Salem, Monterey or Dorr Township districts.

Trouble in setting a nitro shot and subsequent premature shooting about half way down the hole, this week threatened to force junking of Sun Oil Company's deep test on State B1, Section 9-15n-1w, Jerome Township, Midland County, after establishing an oil/gas show in Sylvania sand and reaching the depth objective of 5069 feet. Sylvania sand was logged at 4967 feet with the hole carrying about 4800 feet of water from shallower lime formations. At 5020-26 feet gas and oil showed through the water column and at 4967 feet more water sand was found. A plug-back to 5035 feet was ordered and tubing set to dry up the hole. While being lowered in the shot tube stuck in the hole at about 3800 feet and an attempt to free it with the bailer resulted in premature shooting. Whether the shot damaged the hole so badly that the hole would have to be junked still was undetermined early this week.

Turner Petroleum Corporation's White 1, Section 28-16n-3w, Wise Township, Isabella County, wildcat, which developed 18 barrels natural production averaged 55 barrels daily over a 6-day test following a 250-gallon acid shot. Test is producing from Dundee limestone at 3713 feet. Top of the lime was checked at 3654 feet. Re-acidized August 20, with 750 gallons, well increased first day to 98 barrels.

Gulf Refining Company is reported considering a 7000-foot Sylvania sand lime test in Kawkawlin Township, Bay County, in the block of several thousand acres where the company has drilled two small Dundee producers this year.

Fifteen rigs now are active in the Freeman-Redding district, Clare County, with Pure Oil Company's Switzer 1, Section 27-19n-6w, drilling Traverse limestone at 3200 feet, depest of the 14 and closest to the 3894-foot objective in the Monroe. Pure Oil Company's test is 2 miles north of the Higelmire-Van Horn discovery in Section 3-18n-6w, which initialed 286 barrels natural but went to 1015 barrels 30 days later with acid treatment.

MICHIGAN
Completions

Company Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Gordon Oil Co., Scholten 2, ne ne ne 1-3n-14w	300	1472
Hubel Oil Co., MacVean 1, se sw nw 19-2n-11w	*	1860
Cooper et al's DeYoung 1, nw nw nw 6-3n-13w	150	1479
Rex Oil Co., Hartman 3, se se se 8-3n-13w	60	1616
Reed Oil Co., Hartman 1, ne se ne 17-3n-13w	*	1768
Ernest Snyder, Vanliedkerke 1, nw nw nw 17-3n-13w	*	1660
Stewart Oil Co., Oldebekking 1, se se 21-4n-14w	900	1478
Traxler & William, Yonkers 1, se sw se 25-4n-14w	*	1590
W. J. Cline, Aldrich 3, sw sw se 36-4n-14w	1100	1460
Muskegon Dev. Co., Berns 1, se nw se 36-4n-14w	200	1464
Sprenger Brothers, Huizen 2, sw se se 36-4n-14w	700	1465
Huizen 4, se se se 36-4n-14w	360	1469
A. S. Cochran, Nienker 2, se sw nw 21-4n-13w	40	1601
Arenac County—		
B. A. Bartlett, Rembiz 1, ne ne ne 35-19n-3e	*	2046
Cass County—		
Guy Obenauer, Neel 1, sw nw sw 6-5s-14w	*	1240
Clare County—		
Gulf, Ann Arbor 1, nw nw 21-18n-5w	*	4285
Gladwin County—		
R. E. King's LaGurgey 1, nw sw ne 20-17n-2e	18	3555
Bell & Mark, Schember 4, se nw nw 26-18n-1w	150	3575
Caldwell, Inc., Hostetler 4, sw se ne 27-18n-1w	75	3599
Isabella County—		
Turner Pet. Corp., White 1, se ne nw 28-16n-3w	55	3713
Kalamazoo County—		
W. H. Thourlby, Vilestra 1, nw ne sw 31-1s-11w	*	1571
Midland County—		
Sun, State B9, sw ne se 27-16n-1w	457	3803
Montcalm County—		
Rex Oil Co., Hansen 1, se se nw 19-11n-8w	*	3362
Tuscola County—		
Meredith, Sand Co. 1, c ne nw 32-11n-8e	*	2715
Van Buren County—		
Fisher & McCall, Wiggins 1, se sw se 9-1s-14w	1100	1221

*Failures; †Junked; ¶Million cu. ft. gas

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IMPORTANT WILDCAT TESTS

ARKANSAS

Calhoun—C. E. Murdock's Southern Kraft 1, se nw nw 17-14-13, spd and sd cur titles. S. S. Alexander's Smythe 1, ne ne 7-11-14, mim. **Clay**—Canadian American Oil Co.'s Smith 1, c ne nw 9-20-8, elev 375 ft, top Nacatoch 800 ft, sd 1005 ft shale. **Cleveland**—W. E. Allaun Tr.'s Moore Est. 1, sw se nw 34-9-10, tested 1200 ft fresh water 1760-89 ft, sd 2915 ft. **Columbia**—J. A. Longino's Baker 1, se nw nw 13-17-20, mim. E. O. Olds' Mary Denis 1, nw se sw 4-17-21, owdd, td 4513 ft. G. H. Vaughn & Shell's Garrett 1, c ne se 12-17-20, dr 3980 ft. Standard of La.'s Tina Crumpler 1, c sw nw 15-17-19, top chalk 2391 ft, set 9⅝-in csg 2408 ft, top Permian lime 7356 ft, flowing oil and sw, arr wo td 7500 ft. Harris Unit 1, c ne sw 15-17-19, rur. Fohs Oil Co.'s Phillips 1, nw nw sw 15-17-19, elev 269 ft, set 7-in csg 7404 ft, perforated 7380-85 ft, showed oil & sw, pb to 7286 ft, dr out cement to 7380 feet, perforated casing 7370-78 feet, flowed 35 barrels oil hour, no sw, for 4 hrs, gauged 145 bbls daily, old td 7424 ft. Atlantic Ref. Co.'s Harrington 1 (was M. Talley 1), c sw nw 14-17-20, hole clean, dr 6960 ft. M. Talley 2, nw sw 14-17-20, lcn. Baker 1, se ne 14-17-20, elev 377 ft, top James sand 3802 ft, dr 6003 ft. Baker 2, sw ne 14-17-20, lcn. Baker 3, sw nw 14-17-20, lcn. Baker 4, nw ne 14-17-20, lcn. Petroleum Finance Corp. of Texas' Alice Baker 1, c sw nw 13-17-20, elev 359 ft, top James sand 3750 ft, dr 5980 ft. Barnett 1, c nw se 14-17-20, lcn. **Craighead**—Tenn. Ark. Inc.'s Ruby Martin 1, ne ne 35-14n-3e, woc 1688 ft, td 1730 ft. **Crittenden**—Stanley Oil Corp.'s D'Annar Hrs. 1, c 18-8n-9e, top Paleozoic 3243 ft, arr acidize 3331 ft. **Little River**—J. G. Strahan's Dierks Lbr. Co. 2, sw se 21-12-28, elev 268 ft, owdd, top lime 2421 ft, sd 3201 ft. Clark et al's Strawn 1, sw sw se 20-10-32, dk. **Lonoke**—J. W. Eddington et al's Anderson 1, nw ne 7-4-9, 12-in csg 85 ft, sd 600 ft. Cabot Drlg. Co.'s Benson 1 (Cabot townsite lcn), sd 600 ft. J. E. Russell's Gunter 1, se se 17-5s-10w, sd 1620 ft. **Miller**—F. F. Earles' General American 1, se sw 20-14-26, sd 1232 ft. **Nevada**—Texas-Canadian's Stocks 1, c nw se 9-15-22, woc 9⅝-in csg 1378 ft. **Pulaski**—Coker Oil Corp.'s M. S. Stone 1, sw ne se 36-3n-11w, 12½-in csg 108 ft. **Union**—Joe Modisett et al's Frost Lbr. Co. 1, ne ne 8-18-12, 9⅝-in csg 3307 ft, dry, abn, td 6505 ft.

CALIFORNIA

—Los Angeles: Castaic—Royal Land's No. 1, 8-4-17, dr hard shale 1061 ft. **La Mirada**—D. H. B.'s Buena Park 1, 34-3-11, rig. John McKeon's Carmenita 1, 21-3-11, dr hard shale 7521 ft. **Mint Canyon**—Mojave Petroleum's Jennings 1, 33-5-14, rur owdd 2543 ft. **Palos Verdes**—Rolling Hills' Weston 1, 27-4-14, fsg 5088 ft. **San Fernando**—Tide Water Associated's Porter 1, 27-3-16, oih, preparing to test 3745 ft. **San Pedro**—R. T. Grady's Supulveda 1, 23-5-14, completing rig. **Whittier**—Security Land & Water Co.'s No. 1, 8-2-11, dr sand and shale 1833 ft. **Orange: Costa Mesa**—A. V. Oil's No. 1, 16-6-10, dr hard shale oih 4634 ft. **Kraemer**—Congress' Kraemer 1, 36-3-9, potential of 110 bbls daily 3014 ft. **San Bernardino: Chino**—Southern Counties' Los Serranos 1, 22-2-8, dr sand and shale 520 ft. **San Diego: Carlsbad**—Dauphin Development's Irwin Kelly 1, 16-2-4, rur on lcn. **Fresno: Coalinga**—Holly's No. 1, 12-20-15, lcn. Petroleum Securities' Grimes 88, 12-20-15, dr shale 6652 ft. Same, No. 7-7F, 7-20-16, dr shale 6035 ft. Magnet's Fearon 2, 18-20-15,. dr brown shale 3385 ft. Medford's F. C. Goetz 1, 10-20-15, dr brown shale 5586 ft. Standard's No. 82-13-C, 13-20-15, dr sand and shale 4747 ft. Superior's Hight 1, 8-20-16, dr shale 7324 ft. Texas Co.'s Mohawk 19, 12-20-15, wocs 4424 ft. Tide Water Assoc.'s Fleishacker 57-1, rur. Same, Guardian 66, 12-20-15, dr hard sand 4698 ft. Universal Consolidated's Leavitt-Hintze 1, 12-20-15, dr gray brown shale 6440 ft. **East Coalinga**—Pure's S. P. L. Co. 1, 31-18-17, dr hard shale 11,818 ft. **Jacalitos Hills**—Jacalitos Petroleum's No. 1, 14-21-15, dr hard shale 6916 ft. Dauphin Development's Ragan 1, 19-21-14, dr shale 325 ft. **Kern: Belridge**—F. E. Abbott's No. 1, 18-27-19, rig. **Buena Vista Lake**—Ohio's K. C. L. A-8, 32-31-26, acid treated—swabbing water trace of oil 11,186 ft. Same KCL F-1, 10-31-25, dr sand and shale 3427 ft. **Buttonwillow**—California Lands' Salisbury 1, 7-29-24, lcn. **Devils Den**—Gibson's Alferitz 3, 14-25-18, dr hard sand oih 950 ft. **Dominion**—Master Petroleum's U. S. 1, 34-26-28, rur. **Edison**—G. W. Johnson's Brown-Paulette 1, 33-39-30, wocs 1162 ft. **Elk Hills**—Richfield's KCL-Western 1, 32-30-25, dr sand and shale 6515 ft. **Fruitvale**—Texas Co.'s Camp-West-Lowe 1, 7-29-27, dr gray sand 8728 ft. Continental's KCL B-2, 12-29-26, dr hard shale 8226 ft. **Grapevine-Wheeler Ridge**—Hall-Baker's Reserve 33-2, 33-11-19, preparing to swab 4615 ft. Richfield's KCL 1, 28-11-20, m 5879 ft. Wilshire's Tejon 34-1, 34-11-19, rig. **McVan**—Desert Glow's No. 3, 14-27-27, rig. Charles R. Fickart's Claflin 1, 10-27-27, owdd 2169 ft. Framac's Brown 3, 22-27-27, wocs 1355 ft. **Mt. Poso**—Federal Drilling's B. & G. Glide 3, 13-26-27, dr gray sand 2210 ft. Trico Oil's Villard 1, 17-26-28, lcn. W. P. W. Petroleum's W. P. W. 5, 14-27-28, lcn. **Richgrove**—Dilamar's Quinn 1, 15-25-27, pumping est 100 bbls daily 2956 ft. Seaboard's Carver 1, 17-25-28, core hole, no information available. **San Emigdio**—Shell's KCL 1-A4, 26-11-22, dr sand and shale 10,347 ft. **Union Avenue**—Richfield's Union Ave. 1, 6-30-28, dr sand and shale 4404 ft. **Wasco-Semitropic**—Continental's KCL A-3-8, 8-27-24, dr hard sand 11,861 ft. Same, Seaboard-Assoc. KCL C-1, 27-27-24, sdtr fsg 12,778 ft. Standard's Mushrush 1, 7-27-24, dr gray shale 10,438 ft. Same, KCL 8-B-1, 17-27-24, fsg cones 11,720 ft. **Kings: Alpaugh**—Tri-Counties' Olson 1, 10-23-22, sd 7769 ft. **Tulare Lake**—Athalie Irvine's No. 1, 11-24-20, dr sand and shale 1865 ft. **Tulare: Ducor**—Nelson & Davison's Muller 1, 1-24-27, dr brown shale and sand 1267 ft. **Trico**—Caminol's A. O. G. 3, 29-24-24, dr sand and shale 7656 ft. **Santa Barbara: Gato Ridge**—Barnsdall's Magenheimer 5, 9-8-32, dr brown shale 2768 ft. Same, Pezzoni 1, 15-8-32, lcn. Petrol's Magenheimer 5-11, 9-8-32, dr brown shale 3720 ft. **Lompoc**—J. E. O'Donnell's Helen 1, 8-7-33, dr gray sand 3710 ft. **Los Olivos**—Continental's La Laguna 2, 25-8-31, rur. **Orcutt**—Warren Deuel's Garrett 1, 12-9-34, rig. **Santa Barbara: Mesa**—Anacapa Oil's Lowe 1, redrilled 1905 ft, td 2108 ft. Trans-Oceanic's Morrison 1, dr red shale and sand 3215 ft. **San Luis Obispo: Elkhorn**—California Petroleum's Job 1, 6-10-24, sd 2210 ft. Same, Irons 1, 19-10-24, rur. G. E. Renner's R. H. L. 1, 7-32-22, lcn. Harry E. Lee's Defiance 1, 7-32-32, dr blue clay 159 ft. **Edna**—Loma Grande's Luis 1, 28-31-13, rur. **Huasna**—Hancock's Scherer-Dickes 1, 30-12-33, preparing to test 5593 ft. **Paso Robles**—Vanguard's Clark 1, 26-27-14, dr shale 4684 ft. **Ventura: Ojai**—High Mesa's Butcher 1, 16-4-22, sdtr 1710 ft. Holly Development's Macrate 1, 27-4-23, sd 4786 ft. **Sespe**—Commander's No. 7-F, 13-4-19, r 575 ft. Charles R. McKinnis' Cosley 1, 14-4-19, dr brown shale 658 ft. Merchants' Cochrane 8, 1-4-20, dr sand and shale 852 ft. St. Louis' Williamson 1, 1-4-20, co 420 ft. **Shiells Canyon**—Texas Co.'s Shiells 135, 4-3-19, dr sand and hard shale 635 ft. **South Mountain**—Albatross' Scheiferle 1, 17-30-20, rig. Clipper's Calco 1, 17-30-20, rig. Texas Co.'s Yale Richardson 5, 13-3-21, dr hard sand 6151 ft. **Tar Creek**—Section 20's No. 1, 20-5-19, bailing 2100 ft. **Timber Canyon**—Hardison & Temple's No. 1, 22-4-21, sd 640 ft. J. W. Martin's Arnett 1, 15-4-21, dr hard shale 1230 ft. Stallings, Senter & Ahlburg's Stallings 1, 24-4-21, preparing to test 1445 ft. Ventura Drilling's No. 1, 10-3-23, shale, fsg 260 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abandoned.*
bbls—*barrels.*
br—*building rig.*
bs—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper.*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

FLORIDA

Levy—Florida Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, top chalk 3110 ft, odor gas 3853 ft, sd 3986 ft, shale. **Nassau**—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-14n-24e, elev 110 ft, 6⅝-in csg 3935 ft, sd for sand line 4510 ft **Polk**—Edw. A. Hill's Polk County Lbr. Co. 1, nw nw ne 32-25s-25e, dk. **Suwannee**—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, sd for heavier rig, td 200 ft. J. W. Phillips Oil Explorations' Shilkett 1, nw nw 14-4s-14e, spd.

ILLINOIS

Bond—Huppard et al's Dresser 1, sw ne nw 21-6n-4w, dr 1555 ft. Elmora et al's Dilman 1, sw se sw 13-6n-2w, dr 340 ft. **Cass**—Duval's Bowen 1, nw nw se 30-17n-12w, sd 530 ft. **Champaign**—Nedra's Block 1, se se ne 33-18n-10e, caving hole, pulling csg. **Clark**—Watkins et al's Wise 1, ne se 23-1n-3w, sd 260 ft. **Clinton**—Farreley et al's Berginan 1, ne sw nw 30-1n-3w, ru. Schlafly's Brinkman 1, ne ne nw 31-1n-2w, sd 1575 ft. Phelps' Dodillet 1, se nw sw 25-1n-1w, sd 1410 ft. Traham et al's Nicolay 1, sw nw ne 14-2n-1w, dr 510 ft. Sappington et al's Hilgemann 1, se ne nw 22-3n-3w, fsg 1023 ft. M. & K.'s Kesner 1, ne nw ne 10-3n-2w, ru. **Coles**—Kingwood's Tomberlin 1, sw se se 21-11n-10e, dr 2250 ft. **Crawford**—Kesl et al's Warner 1, nec 23-4n-11w, sd 1710 ft. **Cumberland**—National Consumers' Ward 1, ne se ne 17-9n-9e, dr 1515 ft. **Dewitt**—Smith et al's Hill 1, sw nw nw 20-21n-1e, sd 150 ft. **Edgar**—Lapsley's Bell 1, sw sw ne 17-14n-13w, dr 125 ft. Bearcey et al's Blair 1, ne ne nw 23-14n-14w, dr 270 ft. Mabee et al's Oakland 1, nw nw ne 31-14n-14w, sd 1125 ft. **Edwards**—Leach Bros.' Lee 1, sw ne se 11-1s-10e, to dd, td 3370 ft. **Fayette**—Jarvis' Welker 1, c ne se nw 31-7n-3e, tst, td 1570 ft, show oil. Hayes et al's Thull 1, c se sw se 14-8n-1e, sd 610 ft. Whisenant et al's Sanders 1, c sw se nw 36-9n-3e, dr to otd 1672 ft. **Franklin**—Adams' Coal 1, sw sw ne 19-5s-2e, dr 1250 ft. **Gallatin**—Bailey et al's Logan 1, se ne ne 21-8s-8e, sd repairs 1250 ft. **Jasper**—Kingwood et al's Harrison 1, c w- sw sw 2-7n-10e, dk. **Jefferson**—Gill's Smithey 1, c wp nw ne ne 6-1s-1e, to shoot, td 1050 ft. Benedum & Trees' Jeff 1, c nw ne 16-4s-2e, ru. Dee et al's Hamilton 2-A, sw sw nw 20-4s-3e, sd 1800 ft. **Johnson**—Elzie's Boner 1, c sw ne 30-11s-3e, sd 90 ft. **Macoupin**—Spence's Fee 1, se sw sw 13-8n-9w, dr 1310 ft. Livingston's Lippold 1, c sp ne sw 21-9n-8w, dr 280 ft. **Marion**—Gray et al's Welch 1, ep ne nw 2-1n-1e, ru. Thompson's Wright 1, c ne se ne 8-1n-1e, mirt td 1282 ft. Gardenhire's Weener 1, sw ne se 12-1n-1e, dr 750 ft. Dalton's Dalton 1, ne se ne 19-1n-3e, sd 2300 ft. Dalton's Clifton 1, ne sw sw 15-1n-4e, sd 2682 ft, small show oil. Boyce et al's Foster 1, c ne ne se 10-2n-1e, dr 1215 ft. Oil Royalty's Suggs 1, c w½ nw nw 11-2n-1e, sd 1010 ft. Carpenter et al's Holsapple 1, ne ne se 25-2n-1e, dr 1695 ft. Robertson et al's School 1, ne nw se 20-2n-2e, lcn. Robertson et al's Church 1, swc nw 21-2n-1e, lcn. Sheppard et al's Greer 1, sw ne sw 30-2n-2e, dr 1310 ft. Pyramid's Roddy 1, se se sw 20-2n-3e, sd 2205 ft. Coyer's Mulvaney 1, se ne se 6-2n-4e, sd 710 ft. Shobe's Morey 1, sec 4-4n-1e, ru. Penn-Illinois' Nichols 1, ne sw sw 22-4n-2e, dr 1810 ft. **Madison**—Spivey's Storms 1, se se ne 15-6n-8w, dr 1495 ft. **Massac**—Kahle et al's Harvick 1, swc 23-14s-3e, dr 2910 ft. **Menard**—Scroggins' Fee 1, c sw sw 24-19n-5w, sd 1570 ft. **Montgomery**—Baker et al's Satterlee 1, ne sw sw sw 6-8n-5w, dr 550 ft. Myers et al's Klekamp 1, sw se 29-8n-5w, sd 910 ft. **Morgan**—Waverly's Hubbs 1, c e½ e½ e½ 33-14n-8w, sd 1400 ft. Alexander's Gray 1, e½ nw ne 36-15n-8w, lcn. **Pope**—Whitlock et al's Anthis 1, ne nw ne 12-11s-5e, sd 1750 ft. **Randolph**—Cain et al's Smiley 1, se se ne 31-4s-5w, sd 560 ft. Schlosberg et al's Mayer 1, se ne sw 4-5s-6w, sd 350 ft. **St. Clair**—Neil's Pfeffer 1, ne se se 20-2n-6w, sd 650 ft. **Saline**—Carpenter et al's Sloan 1, se se sw 32-7s-6e, dk. Siegel et al's Choisser 1, ne nw nw 5-8n-7e, sd 100 ft. **Shelby**—Carter's Bartscht 1, c sw se 20-9n-4e, dr 995 ft. Jolly et al's Jenkins 1, sec 26-10n-4e, sd 1000 ft. Producers' Boys 1, c ne ne nw 27-12n-3e, sd 1805 ft. **Washington**—Harris et al's Hage 1, c s½ se se 18-1s-5w, ru. Morris' Marquard 1, se nw sw 33-1s-5w, rng csg 615 ft. Salvage's Reinkenemeyer 1, se se ne 11-1s-2w, sd 1030 ft. Townsend et al's Kaker 1, se se nw 6-2s-3w, dr 490 ft. Lamb's Paul 1, ne se se 29-3s-5w, dr 750 ft. Thompson's Musial 1, se sw nw 19-3s-1w, may dd, td 1265 ft, show oil. **Wayne**—Gordon et al's Fitch 1, c wp sw nw 11-1n-8e, lcn. Sloan et al's Walker 1, c nw nw nw 16-3s-9e, tst, td 3305 ft. **White**—Arab's Doerner 1, sec 12-7s-8e, dr 2705 ft. **Williamson**—Geological Oil Synd.'s Scott 1, sw se sw 4-10s-2e, rng csg td 1470 ft.

KANSAS

Barber—Pryor's Gant 1, "C," nec 18-31-13w, hfo, td 4610 ft. **Barton**—Continental's Pinchner 1, se nw 23-16-11w, lcn. Carlock's Demel 1, ne nw 30-17-13w, co 470 ft. **Butler**—Ramsey's Fee 2, nw sw ne 8-24-5e, drlg 2455 ft. Simpson's Equitable 1, swc 15-25-3e, co 2835 ft. Solomon's Sawyer 1, sw nw sw 2-28-7e, drlg 103 ft. Pryor's Lietzke 1, nw sw nw 24-28-7e, ur 10-in 1360 ft. **Cowley**—Gralapp's Clark 1, nw ne 11-31-3e, rig. Barnsdall's Elliott 1, nec 5-31-5e, rig. McKnab's O'Neal 1, nwc se 27-32-3e, drlg 1000 ft. **Ellis**—Davis' Smith 1, sw nw ne 11-12-16w, 2000 ft oih. **Geary**—Fowler's Aye 1, nw sw nw 10-12-8e, spd & sd. **Greenwood**—McGinnis' Smith 3, nw ne ne 10-24-13e, fsg 1215 ft. Nichols' Central

1, se sw 35-25-12e, mach. Fullerton's Bates 1, ne sw se 32-26-11e, spd & sd. Dunlap's Warren 1, nw sw 4-28-10e, drlg 895 ft. **Kingman**—Bunte's Shepard 1, sec 10-27-10w, pb to 4075 ft. **Marion**—Johnson's Miltz 1, swc 24-17-4e, drlg 1950 ft. Harwood's Kaufman 1, nwc se 27-17-4e, fsg 1240 ft. **Meade**—Pacific's Rexford 1, ne se sw 8-30-29w, run 10-in 1350 ft. Cragin's Adams 1, nwc se 22-34-30w, rur. **Ness**—Carlock's Smith 1, c sw se 11-17-25w, rig. Sinclair's McKinley 1, "A," sw nw 26-18-26w, drlg 3185 ft. **Norton**—Vicker's Bozarth 1, c sw sw 15-5-24w, coring 3464 ft. **Ottawa**—Babcock's Copeman 1, c nl s½ s½ se 7-10-2w, ur 10-in 2050 ft. **Pratt**—Champlin's Elliott 1, sw ne 26-27-14w, br. **Reno**—Scherzer's Krey 1, se sw 19-23-10w, mim. **Rice**—Cities' Flora 1, sw ne 12-19-10w, testing. Watchorn's Caldwell 1, ne se ne 29-20-9w, rig. **Rooks**—Producers' Ham 1, sw nw 25-7-19w, sd 1800 ft. Shindhelm's Dorr 1, se sw 13-9-16w, drlg 3425 ft. **Russell**—Stearns' Stielow 1, nw nw 32-11-14w, drlg 3285 ft. Hinkle's Kaufman 1, se nw 10-15-12w, drlg 2885 ft. **Saline**—Sullivan's Erickson 1, ne ne 28-16-3w, drlg 1400 ft. **Sedgwick**—Hutton's Phillips 1, nw ne se 14-26-1w, rig. Hudson's Fulton 1, ne se 35-28-1e, co 2306 ft. Crowe's Murphy 1, sw se 34-29-1w, ru. **Shawnee**—Edwards' Detrich 1, c nw se 21-14-15e, sd 1130 ft. **Stafford**—Stanolind's Curtis 1, sec 31-21-12w, rig. Rowley's Sittner 1, se ne 35-21-12w, rust 3575 ft, Newbold's Walker 1, nec sw 24-24-12w, drlg 2165 ft. **Sumner**—Cameron's Frey 1, nwc 5-30-1e, br. **Thomas**—Ramsey's Ryan 1, c ne se 27-8-32w, br. **Woodson**—Natan's Ellis 1, nwc se 35-25-14e, ur 6-in 1480 ft.

SOUTH LOUISIANA

Acadia—Atlantic's Klumpp 1, northeast of Tepetate, 12-7s-2w, mim. **Avoyelles**—Magnolia's Bowden 1, Evergreen area, 7-2s-4e, ru. **Calcasieu**—Sun's Lutcher Moore 1, Luntia area, 12-8s-3w, woc 2019 ft. **Cameron**—Federal Royalty Co.'s State 1, Calcasieu Lake, 1-13s-9w, dk. Humble's Hanszen 2, Chalkley area, 9-12s-6w, woc 9782 ft. Union Sulphur's Miami Corp. 3, Willow Lake prospect, 33-12s-8w, dr shale 3218 ft. **Jefferson Davis**—Continental's J. Sturdivant 1, South Roanoke, 36-10s-4w, dr shale 11,169 ft. **Lafourche**—Sun's Dibert Stark and Brown 1, Chacahoula dome, 70-15s-15e, dr shale 7077 ft. Texas Co.'s La Terre 1, Golden Meadows prospect, 1-20s-21e, dr plugs at 8898 ft. **Orleans**—W. T. Burton's State 1, in Lake Ponchartrain, 10s-13e, dr shale and lime 7886 ft; same operator's Faubourgde Monteluzin 2-B, Lake Ponchartrain, 11s-13e, dr shale 3638 ft. **St. James**—Continental's Colonial Sugars 1, Convent, 46-12s-5e, dr shale 8980 ft. **St. John**—Shell's Godchaux Sugar 1, La Place, 97-11s-7e, dr sand, no show, 8954 ft. **St. Landry**—Herton's Thistlewaite Lbr. Co. 1, Beggs area, 60-4s-4e, dr shale 1405 ft. **St. Martin**—Shell's Jeanerette Lumber Co. 1, West Lake Verrett area, 14-14s-12e, fsh 10,550 ft. Texas Co.'s St. Martin Land Co. 11, Henderson, 21-8s-7e, dr salt 9404 ft; State 6, Lake Mongouloui area, 10-10s-9e, dr water sand 7185 ft. **Terrebonne**—Fohs Oil Co.'s State Bay Baptiste 1, La Terre area, 41-19s-19e, comp, 55 bbls distillate daily, 11,178 ft. Shell's Peters 1, south of Houma, 73-18s-18e, dr shale 9739 ft.; Realty Operators 1-C, Minor area, 10-18s-16e, abn 11,208 ft. Texas Co.'s State Coon Point 1, Caillou Bay, 22s-14e.

NORTH LOUISIANA

Bienville—DeSoto O. & G. Co.'s Wm. Ashley 3, c nw se 15-16n-10w, rog. Mrs. B. A. Fleming 1, nw nw 18-16n-9w, claim sg, so, woc 10¾-in csg 2900 ft, td 5303 ft. **Bossier**—Lloyd & Sloan's B. A. Sherrill 1, se se 12-19n-12w, sd 785 ft. **Caddo**—Oils Inc.'s A. Cazaux 1, sw sw 16-16n-13w, 10-in csg 300 ft, sd 3375 ft. J. Thomas Driscoll Inc.'s Woolworth 1, se se 19-18-14, lcn. Superior Oil Corp. & F. W. Martin's Andrew Querbes 1, 37-17n-13w, rur. R. E. Allison et al's Ellerbe 2, ne ne 28-18n-14w, lcn. **Caldwell**—Oakes et al's Kyles 1, sw ne 18-11n-3e, sd 470 ft. **Catahoula**—G. E. Foster et al's W. S. Peck 1, c s½ 39-10n-8e, sd 620 ft. **Claiborne**—E. T. Oakes et al's Kilgore 1, ne se 28-21n-5w, elev 288 ft, 5¾-in csg 5290 ft, logged saturated lime 5297-5305 ft and 5307-12 ft, swabbing oil, td 5337 ft. J. N. Buchanan's Miller Est. 1, ne sw 11-20n-8w, rur. **De Soto**—S. D. Taylor's Barnhart 1, ne se 20-14n-12w, lcn. Samuel S. Alexander's Stell A-1, ne ne 5-12n-16w, dr 1920 ft. Potter & Rubeling's Smith 1, sw se nw 6-12n-15w, lcn. G. H. Collins et al's Joyner 2, sw ne 28-11n-12w, woc 7-in csg 2892 ft, td 2925 ft. Al Sutton et al's (formerly Fuqua & Gray) Frost-Johnson 1, se se 25-11n-15w, woc surf csg. **Grant**—C. L. Thomson et al's Woodward 1, ne sw 10-6n-3w, top Wilcox 2867 ft, sd 4527 ft. C. R. Bowers et al's Harrison 1, ne sw 21-8n-5w, arr deepen 1110 ft. **Madison**—Continental Oil Co.'s Singer Mfg. Co. 1, n½ ne nw 3-15n-11e, dr 3038 ft. **Natchitoches**—Joe E. Popkins' Peavy-Wilson 1, nw nw 36-7n-9w, sd 300 ft. W. T. Ryan et al's Lambert 1, nw nw 4-8n-9w, sd 4189 ft. Raines Bros.' Allen Plantation 1, ne sw 22-10n-9w, fsg 1250 ft. **Rapides**—J. J. Farrell's Certner 1, nw se 16-4n-1e, rur. E. F. Kalb et al's Lee Lbr. Co. 1, nw sw 9-5n-2e, spd and sd. **Red River**—Glassell & Whitehurst's LeLong 1, ne nw ne 25-12n-11w, sd 3113 ft. W. J. Hunter's Long Bell 4, se se 30-13n-9w, testing 1110 ft. **Sabine**—W. L. McClanahan et al's Frost-Johnson 1, se ne sw 22-9n-13w, elev 196.2 ft, top Nacatoch 1531 ft, top Saratoga chalk 1578 ft, Annona chalk 1816-2041 ft, Austin chalk 2854-3007 ft, top Glen Rose 3286 ft, blew out gas, so 4745 ft, pb to 3050 ft, tested mud, pb to 1750 ft, acidized old td 5710 ft. H. M. Sneed et al's Leone 1, nw se 8-7n-13w, rur, J. G. Sutton-Zwolle Oil Co.'s Bowman-Hicks 2, w½ sw nw 24-7n-13w, lcn. Albert Reich et al's Giaque 1, ne se ne 27-7n-14w, sd 4317 ft. F. W. Martin & Co.'s Sabine 2, c e½ ne 23-7n-14w, lcn. A. Boykin King's Sabine 1, c nw nw 19-7n-13w, sd 4517 ft, may deepen to 6000 ft. Sabine A-1, c w½ nw nw 19-17n-13w, lcn. Sabine 2, c sw nw 19-7n-13w, lcn. Zwolle Synd.'s Mansfield Hdw. Lbr. Co. 1, ne ne 8-7n-14w, dr 4195 ft. Tropical Oil Co.'s (was Quality Prod. Co.) Long Bell Lbr. Co. 1, se se 5-8n-13w, sd 2178 ft. **Webster**—W. M. Chambers' Thomas 1, se se 11-22n-11w, ru & sd. Magnolia's Pardee Co. 1, ne nw ne 17-23n-11w, elev 203 ft, top Blossom 2665 ft, tested 17 joints sw 16 min dst 2664-73 ft, top Pettit 5920 ft, logged good porosity so, sg, 5920-6025 ft, arr run formation tester td 6025 ft. H. M. Branton 1, ne ne 6-22n-9w, rur. Bailey-Rosenberry 1, nw se 29-23n-9w, lcn.

MICHIGAN

Allegan—O'Brien's Raber 1, 36-2n-13w, so, sd 1410 ft. Daily Crude Oil Co.'s Anderson 1, ne ne se 24-1n-14w, dr 145 ft. Henry's Honeysette 1, 27-1n-11w, dr 1678 ft. Muskegon's Todd 1, 24-2n-16w, sd 1250 ft. United's Low 1, 24-1n-15w, sd 1209 ft. Leoghton Oil Co.'s Wiggins 1, 15-4n-11w, lcn. Shimmel's Saugatuck 1, 28-3n-15w, sd 1460 ft. Miller Brother's Wood 1, 3-1n-12w, so, sd 1504 ft. Leonard Oil Co.'s Konig 1, 35-3n-16w, rig. **Arenac**—McHugh's Stevens 1, 8-19n-5e, dr 650 ft. Tamblyn's McFarlan 1, 34-20n-3e, dr 2215 ft. **Barry**—Collins' Simmons 1, 3-4n-10w, dr 1410 ft. **Calhoun**—Mar-Cal's Woods 1, 13-2s-6w, rig. Verona's Fruin 1, 29-1s-7w, sd 2100 ft. **Clinton**—McDonald's Koeppen 1, 19-6n-3w, dr 650 ft. **Gladwin**—Sun's Reid 1, se se sw 18-19n-2w, lcn. **Gratiot**—Kritzman's Ryan 1, 32-10n-1w, rust 1075 ft, Michigan Chemical's Fee 9, 24-12n-3w, dr 3800 ft. **Huron**—Leonard Prosp. Co.'s Milling Co. 1, 10-16n-15e, dr 2560 ft. **Isabella**—Keeler & Chatham Oil's Stevens 1, 13-16n-6w, dr 461 ft, Teater's Bellinger 1, 32-14n-5w, dr 2100 ft. Bell-Marks, Inc.'s Moore 1, 8-13n-5w, Dundee 3701, sw 3706 ft, dr 3715 ft. Rowmor's Weideman 1, 26-13n-5w, Dundee 3573 ft, sw 3575-96 ft, sg 3597 ft, sd. **Kent**—MacCallym's Story 1, 32-7n-12w, rig. **Mackinac**—Van Kuren's Hiawatha Club 2, 27-44n-9w, sd 650 ft. **Mecosta**—Daily Crude Oil Co.'s Thrush 1, 25-16n-7w, dr 2970 ft. **Midland**—Sun's State B1, 9-15n-1w, Dundee 3672 ft, Monroe 3830 ft, so 4642 ft, Sylvania 4767 ft, so&g 5020-25 ft, td 5069 ft, pb 5035 ft, shot, testing. Stork Oil Co.'s Steger 1, 23-15n-2e, rig. Teater's Tushingham 1, 26-16n-2w, dr 3445 ft. **Missaukee**—Teater's Gray 1, 32-23n-5w, Dundee 3655 ft, sw 3726-46 ft, sd 3752 ft. Moser Oil's Schenenhelm 1, 36-23n-7w, fsg 1350 ft. **Montcalm**—Rex Oil Co.'s Cheney 1, 11-9n-5w, dr 640 ft. Taggart's Jacks 2, 7-12n-9w, fsg 3565 ft. **Osceola**—Fortney Oil Co.'s Beall 1, 25-18n-9w, rust. Champion's Ealy 1, 30-20n-8w, skidding rig, lost second hole 310 ft. **Otsego**—Summer's Geraldine 1, 28-30n-3w, dr 600 ft. Snow's Moore 1, 13-29n-2w, sd 1205 ft. Barton's Yuill 1, 9-32n-3w, sd 1427 ft. **Ottawa**—Sommerville's Bowman 1, 19-7n-14w, dr 670 ft. **Roscommon**—Kirkham's Miller 2, 6-22n-2w, dr 1100 ft; St. Helen 1, 36-22n-2w, dr 450 ft. Sun's Hanson 1, 2-23n-2w, dr 1450 ft. **Shiawassee**—Buzard's McCall 1, 11-6n-3e, sd 1500 ft. **Van Buren**—Rose's Peters 1, 11-1s-13w, sd 2084 ft. Whitehill's Webster 1, 35-2s-16w, dr 160 ft. **Wayne**—Bellville Oil Co.'s Scheffler 1, 26-3s-8e, sd 2946 ft.

MISSISSIPPI

Calhoun—L. C. Lucas' B. C. Boland 1, sw sw 9-22n-9e, spd & sd. S. & O. Properties Inc.'s G. C. Connor 1, se ne 12-24n-8e, sd 2120 ft. **Claiborne**—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, rur to deepen, td 2950 ft. **George**—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, elev 111 ft, 10-in csg 1374 ft, top Het. 1382 ft, dr 3990 ft. **Hinds**—Cleve Love et al's Montgomery 1, sw se se 28-6n-4w, lcn. S. F. Johnson 1, ne se 29-6n-1w, elev 343 ft, top black shale 3040 ft, top chalk 3097 ft, top Eutaw 3617 ft, top Red Beds 3657 ft, 7-in csg 3355 ft, arr deepen td 3707 ft. Progressive Realty Co. 1, se sw 35-6n-4w, top Wilcox 2750 ft, ran electrical tester, sd 6596 ft. G. Jeffries' Gaddis Farms Inc. 1, nw se 26-7n-4w, sd 3253 ft, sandy shale. **Lamar**—Southern Mississippi Pet. Corp.'s Morris 1, nw se 4-2n-14w, elev 332 ft, top Het 1138 ft, 10-in csg 1144 ft, top Vicksburg 1615 ft, top Minden lime 2123 ft, top Wilcox 2735-53 ft, sd 3029 ft (Wilcox). **Montgomery**—Dr. T. A. Chichester et al's E. C. Mitchell 1, se nw sw 30-30n-7e, dk. **Pontotoc**—Waldrop, Melvin & Waldrop's Bray 1, sec n½ sw 17-11s-1e, set surf csg 166 ft, sd 280 ft shale. **Simpson**—Goodwill O. & G. Co.'s Berry 1, se sw 33-2n-4e, elev 307 ft, sd 2810 ft gray gumbo. Cleve Love et al's N. E. Garner 1, 1-10n-17w, spd & sd. **Yalabousha**—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25n-7e, elev 415 ft, dr 2402 ft (Tuscaloosa), no recent report.

OKLAHOMA

Atoka—Shelton's Leo 1, ne nw sw 2-4s-10e, sd 3455 ft. **Beckham**—Wagnor's McGee 1, nec se 25-8n-22w, show gas, sd 1029 ft. **Choctaw**—Ross' Hardy 1, sec nw 21-7s-15e, run csg, td 905 ft. **Coal**—Carter's Mote 1, c e½ sw nw 19-2n-9e, drlg 6035 ft. **Comanche**—Eldridge's Aetna 1, sw se sw 2-1n-10w, drlg 690 ft. Roach's Green 1-A, sec sw 2-1n-13w, drlg 885 ft. Midnite's Howe 1, nwc 20-2n-13w, oil show, td 550 ft. **Garfield**—I.T.I.O.'s Kichin 1, c se se 17-22n-5w, sd at 5763 ft. Champlin's Boehm 1, swc ne 4-24n-8w, drlg 6095 ft. **Grady**—Carter's Smith 1, c se sw 26-5n-8w, lcn. **Hughes**—Cooper's Samuel 1, nw se ne 19-6n-8e, rigging up. Holdenville's Fairgrounds 1, sec 13-7n-8e, sd 1160 ft. Amerada's Conard 1, ne nw sw 33-10n-10e, drlg 4060 ft. **Kay**—Crawford's Boehl 1, sec nw 34-27n-2w, rig up; Blosser's Rudolph 1, nec sw 29n-1w, wost, td 3500 ft. **Kiowa**—Anderson's School Land 1, c sec 14-6n-17w, sd 1896 ft. **Kingfisher**—Hollenback's Zerger 1, c se sw 5-18n-6w, sd 1730 ft. **Lincoln**—British Americans' Markwell 1, c e½ e½ ne 26-12n-4e, drlg 4509 ft. **Love**—Sinclair's Peabody 1, nec 35-6s-2w, drlg 6460 ft. **Noble**—Hollenback's Mathews 1, c sw nw 9-20n-1e, sd 3597 ft. Superior's Loula 1-A, ne se sw 16-22n-1e, lcn. **Pawnee**—Sinclair's McQuain 1, ne nw ne 22-19n-1e, sd 4806 ft. **Pontotoc**—Moore's Payne 1, se nw se 16-4n-4e, oil show, sd 997 ft. **Pottawatomie**—Speers' Vinson 1, sw nw sw 29-8n-5e, drlg 1700 ft. Hall's Merkle 1, nwc se 32-8n-5e, spd. Pace's Riley 1, nec se 2-9n-3e, drlg 475 ft. **Seminole**—Boettcher's Morgan 1, se ne nw 8-5n-7e, drlg 2125 ft. **Tillman**—Smith's Hammel 2, ne nw nw 6-5s-15w, fsg, td 2200 ft. **Washita**—Continental's Proctor 1, c nw¼ 28-10n-20w, r, td 1551 ft. McWhirter's Fee 1, nw sw sw 34-8n-19w, sd 2172 ft.

WEST TEXAS

(This report is confined to the north portion of the Permian basin.)

Andrews—Fuhrman Pet. Corp.'s G. O. Ashton 1, c se se PSL sec 12, blk A-42, elev 3181 ft, top anhydrite 1640 ft, dr 3990 ft. S. H. Forgeron-Olson Dri. Co.'s Lockhart-Brown 1, c ne ne PSL sec 20, blk A-41, elev 3248 ft, top anhydrite 1660 ft, salt series 1690-2720 ft, top brown lime 3995 ft, used 2000 gals acid 4483 ft, dd to 4584 ft, used 2000 gals acid, tested for small pumper, dr 4895 ft. Montecito Corp.-Rhodes-Tompkins & Donnelly's E. Cowden-Sinco 2, near sw ne nw T&P sec 1, blk 44, T-2-N, top anhydrite 1650 ft, dr 2120 ft. Sinclair Prairie's Emma Cowden 3, nw nw ne T&P sec 1, blk 44, T-2-N, elev 3168 ft, top anhydrite 1620 ft, top Yates 2730 ft, top gray lime 3780 ft, cem cas 4050 ft, td 4110 ft. J. W. Trippiehorn et al's M. A. Thornberry 1, nec PSL sec 2, blk A-42, mim. H. C. Wheeler et al's Farmers State Bank (Carlton) 1, c se sw PSL sec 18, blk A-36, cem sur pipe. **Cochran**—Magnolia's Della Wright 1, nec la-

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bor 7, league 96, Mills C.S.L. sur, rig. The Texas Co.'s D. S. Wright 1, near swc labor 23, league 115, Potter C.S.L. sur, elev 3791 ft, top anhydrite 2285 ft, top brown lime 3670 ft, top solid lime 4000 ft, cem 7-in 4551 ft, dr 4658 ft. **Dawson**—Ray Albaugh et al's Dewey Hogg 1, c se se T&P sec 17, blk 34, T-4-N, elev 2895 ft, top anhydrite 1550 ft, dr by junk, td 4125 ft. **Gaines**—R. C. Conkling, J. M. White et al's King 1, n½ sec 6, league 305, Dawson C. S. Lands, lcn. Osage Drl. Co.-A. S. Everest's B. E. Miller-Sun 1, c sw ne W. T. sec 281, blk G, elev 3435 ft, top anhydrite 2275 ft, salt 2320-3230 ft, top Yates 3390 ft, top brown lime 4440 ft, tested dry, sd 5500 ft. **Garza**—Gulf Oil Corp.'s S. P. Swenson Cattle Co. 1, c nw H&GN sec 25, blk 2, Ordovician test, elev 2274 ft, trace oil 6277 ft, dr cherty lime 7148 ft. **Hockley**—Gulf Oil Corp.'s Mallett L&C Co. 2, swc labor 25, league 34, Concho C.S.L. sur, elev 3521 ft, top anhydrite 2135 ft, top brown lime 3850 ft, top solid lime 4210 ft, first oil pay 4975-85 ft, dr 5028 ft with 3000 ft oih. Richardson Oils, Inc.'s Slaughter 2, labor 58, league 39, Maverick C.S.L. sur, elev 3551 ft, top anhydrite 2192 ft, top Yates 2720 ft, top brown lime 3760 ft, top solid lime 4100 ft, show o&g, dr 4955 ft. Skelly Oil Co.'s Ellwood 1, league 15, Howard C.S.L. sur, elev 3409 ft, top anhydrite 2090 ft, top Yates 2670 ft, top brown lime 3635 ft, dry and abd in sul w 5183 ft. Snowden & McSweeney Co.'s Alex Slaughter 1, nwc labor 74, league 35, Zavalla C.S.L. sur, rig. Stanolind's Alex Slaughter 2, swc labor 75, league 37, Zavalla C.S.L. sur, elev 3499 ft, top anhydrite 2218 ft, top Yates 2780 ft, top brown lime 3790 ft, top solid lime 4140 ft, top pay 4957 to 5038 ft, used acid and flowed 355 bbls oil 20 hrs. The Texas Co.'s Bob Slaughter 3, nwc labor 66, league 39, Maverick C.S.L. sur, dr 338 ft. **Kent**—B. Dolman et al's C. V. O'Keefe 1, ne ne nw H&GN sec 50, blk 1, sd 125 ft. **Martin**—T. G. Shaw Oil Corp.'s H. N. Wilkinson 1, ne ne se sec 35, blk A. Bauer-Cockrell sur, dr 510 ft. **Yoakum**—Gulf Oil Corp.'s L. K. Moore 1, sw ne nw sec 897, blk D, elev 3613 ft, top anhydrite 2070 ft, top Yates 2920 ft, sg 3040-50 ft, top brown lime 3900 ft, top solid lime 4350 ft, oil pay 4980-5100 ft, used 9000 gallons acid, flowed 464 bbls 32.9 gravity oil initial. Magnolia's J. H. Lynn 1, c se ne sec 770, blk D, elev 3644 ft, top anhydrite 2170 ft, top Yates 2967 ft, top brown lime 4040 ft, top solid lime 4500 ft, rust, td 4785 ft. Phillips Drl. Co. et al's W. A. O'Brien 1, c se ne sec 442, blk D, elev 3644 ft, top anhydrite 2370 ft, top Yates 3200 ft, top brown lime 4170 ft, top solid lime 4670 ft, dry and abd 5506 ft. H. K. Riddle-Sam C. Yingling's N. Barrier-Gulf 1, c ne se sec 6, blk D, J. H. Gibson sur, elev 3564 ft, dr 2641 ft.

EAST TEXAS

Anderson—Jas. H. Gardner et al's G. W. West 1 (154-ac), L. Hopkins sur, 2½ mi se Denison Springs, elev 557 ft, top Pecan chalk 4583 ft, dr 4890 ft. **Cherokee**—Bunn Drl. Co. et al's Callie Bounds 2 (95.9-ac), W. H. Walters sur, 2½ mi se Lone Star, elev 346 ft, cur fault 3535-45 ft, Austin chalk 3787-3969 ft, top Woodbine series 3969 ft, td 4085½ ft, tested sw, sdo. **Dallas**—Mauldin Oil Co.'s W. E. Howell 1 (107-ac), S. Layton sur, 8 mi east Grapevine, sd 1650 ft. Plaza Oil Co.-W. A. Brooks, Jr.'s B. J. Davidson 1 (75-ac), J. D. Merchant sur, base Woodbine 1970 ft, top Paluxy 2700 ft, sd 3528 ft. **Franklin**—V. A. Hughes et al's W. E. Hayden-Shell 1 (88½-ac), W. Landrum sur, 1½ mi se Hagansport, elev 367 ft, Pecan chalk 1608-88 ft, top Woodbine 3060 ft, top red beds 3105 ft, top Georgetown 3540 ft, Goodland 4283-97 ft, top Paluxy series 4306 ft, top sand 4324 to 4345 ft, tested sw and dry and abd. **Freestone**—G. Shyrock et al's M. S. Clark 1 (122-ac), M. De Cantona sur, 8 mi nw Teague, elev 521 ft, sd repairs 1339 ft. **Gregg**—Humble & Gulf's P. Horton-Dickson 1, H. G. Hudson sur, Trinity test, 3 mi e of East Texas field, elev 275 ft, Pecan chalk 2261-2752 ft, Austin chalk 3308-33 ft, Georgetown lime 3333-4107 ft, dr 4940 ft. **Henderson**—A. R. McElreath-Suggett & Arch Lowrance's T. L. Dean 1 (35-ac), C. M. Walters sur, 1 mi w Athens, elev 490 ft, rig. Humble's J. J. Hearne 1 (200-ac), W. K. Newell sur, elev 327 ft, dr 500 ft. O'Byrne Bros. et al's J. E. Reese 1 (160-ac), G. Kimbro sur, Flag Lake area, elev 359 ft, lcn abd. Peyton Bros. et al's W. W. Carter-Tarkington 2, W. K. Newell sur, elev 326 ft, rig. The Texas Co.'s R. L. Tarkington 1 (50-ac), W. K. Newell sur, elev 301 ft, dr 2760 ft. **Houston**—Humble's C. C. Hill 1 (326-ac), blk 4, J. L. Reviere sur, A-49, Navarro Crossing pool, elev 270 ft, Pecan chalk 4247-4691 ft, Austin chalk 5268-5565 ft, top Woodbine series 5860 ft, sand 5921-35 ft, salt water, dry and abd; Jas. A. Hill 1 (160.7-ac), J. L. Reviere sur A-49, dr 2200 ft. Sun Oil Co.'s Dailey Bros. 2 (1366.7-ac), J. G. Thompson sur, A-1021, lcn. **Kaufman**—Sam Knoerr et al's J. P. Hunter 1 (17-ac), P. Walker sur, 5 mi s Terrell, dk, W. S. McGee et al's Pritchett 1 (15-ac), J. Hendircks sur, 7 mi w Mabank, Austin chalk 2092-2470 ft, top Woodbine 2994 ft, sd 3104 ft. **Lamar**—Dahl Bros. & Barr's Lewis-McCuistion 2 (10-ac), R. Russell sur, 1 mi ne Paris, elev 523 ft, rig. **Leon**—Lone Star Gasoline Co.'s G. W. Lee 2, R. Hunter sur, Buffalo area, elev 344 ft, Pecan chalk 3914-4161 ft, Austin chalk 5008-5250 ft, top Woodbine series 5516 ft, first gas sand 5538-86 ft, broken gas pay to 5797 ft, initial 115,000,000 ft gas. **Limestone**—Cosden-Kahn, Inc.'s J. J. Bower 1-a (15-ac), J. Breeding sur, near Prairie Hill, elev 618 ft, top Austin chalk 1078 ft, top Woodbine series 1542 ft, top sand 1547 ft, dry and abd 1595 ft. J. A. Johnston et al's E. M. Speight 2, A. Varella sur, 8 mi s Mexia, top Pecan 2690 ft, dr 2800 ft. **Navarro**—Mrs. Jane Robinson et al's Fortson 1, Eli Smith sur, 5 mi ne Corsicana, elev 345 ft, Austin chalk 1346-1585 ft, top Woodbine 2185 ft, sd 2765 ft. B. T. Fearis et al's W. M. Montgomery-The Texas Co. 1 (340-ac), I. Redding sur, 7 mi s Kerens, elev 303 ft, Pecan chalk 1800-1925 ft, Austin chalk 2652-3040 ft, top Woodbine 3432 to 3761 ft, dry and abd. Howze Oil Co. & Cochran's J. A. Jackson 1, R. C. Doon sur, ½ mi e Powell, elev 372 ft, Austin chalk 2303-2640 ft, sd 2945 ft. **Rains**—Parsons & Andree's F. H. Glass 1 (80-ac), E. E. Lawhon sur, 1¾ mi se of Point, elev 530 ft, Pecan chalk 1945-2038 ft, Austin chalk 3077-3290 ft, Sub-Clarksville 3394-3409 ft, Woodbine 4074-4246 ft, dry and abd. McKinley & Hastings' McTaggert 1 (21-ac), B. Miller sur, 1 mi w Emory, lcn. **Red River**—Daniels et al's J. J. Gaston 1 (657½-ac) J. Guest sur, 2 mi s Detroit, elev 468 ft, sd 800 ft. Watters et al's J. Phamplin 1, Wm. Moore sur, 3 mi se Kanawha, elev 470 ft, Pecan chalk 78-85 ft, top Red Beds 450 ft, sd 555 ft. C. E. Whitehead et al's R. H. Ringwald 1 (56-ac), A. Moore sur, 1 mi nw Manchester, sd 630 ft. **Rusk**—Thos. L. Johnson-Drake Drl. Co. et al's R. L. Needham 1 (136-ac), Jessie Chambers sur, 3 mi sw Lanesville, elev 319 ft, dk. **Smith**—Combest, Wadsworth & Cox's D. Kendall 1, John Williams sur, 1¼ mi se Jamestown, sd 3226 ft. **Van Zandt**—F. A. Richardson et al's B. C. Dodd 1 (180-ac), T. W. Hutchinson sur, 2 mi s Grand Saline, elev 427 ft, sd 4278 ft. W. S. King et al's Edna Watson 1, M. G. Whitaker sur, 5 mi s Grand Saline, elev 489 ft, dr 310 ft.

EAST TEXAS BORDER COUNTIES

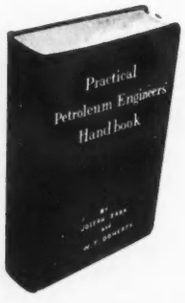
Harrison—W. F. Bridwell's Platt 1, F. C. Baker sur, owdd 5167 ft. **Marion**—Vestal et al's (was Tom Bell) Carrie Moseley 1, D. Lane sur, ran electrical tester, woc td 2768 ft. Ark. Fuel Oil Co.'s Wallace Johnson 1, Alexander Johnson sur, elev 217 ft, top anhydrite stringer 5256 ft, Henderson sand 5984 ft, tested est 30 mcf wet gas 5982-6002 ft, perf csg 6127-30 ft, tested sw, pb to 6125 ft, pckr set 6100 ft, perf in Henderson sand, completed estimated 30 mcf wet gas daily. **Panola**—Texas Co.'s Claude Adams 1, Thos. Cox sur, 13⅜-in csg 579 ft, 9⅝-in csg 5940 ft, elev 287 ft, top lower Marine 7792 ft, dr 10,786 ft, hd black shale. Walters et al's Phomplin 1, W. Moore sur, set 12½-in csg 68 ft, sd 220 ft. Petroleum Heat & Power Co.'s Frost Lbr. Co. 1, Jno. H. Gibson sur, lcn. J. W. Bird 1, Geo. Gallasty sur, lcn. **Sabine**—Hugo Allen et al's (was H. R. Smith) Mrs. Jenny Brook 1, Isaac Low sur, 7 mi ne Hemphill, 360 ac. strong sg 5654 ft, trying to dislodge drill stem, td 5654 ft. **Shelby**—C. L. Cope's Pickering Lbr. Co. 1, English sur, rur. Shelby Oil Co.'s Windham 1, A. K. English sur, cored saturation 3397-3422 ft, testing, td 3422 ft. J. C. Windham 1, nwc Shelbyville townsite, lcn. A. R. Blount's Ethel Lovett 1, block 55, Shelbyville townsite, lcn. Redditt & Gray's Pickering Lbr. Co. 2, sec 237.8-ac tract, P. J. Loggins sur, 7-in csg cemtd at 2920 ft, sd 4225 ft. Richards & Holloway's Ashberry 1, G. W. Mitchell sur, owdd, td 3405 ft.

SOUTH TEXAS

SAN ANTONIO DISTRICT

Atascosa—Chapman Minerals & Altgelt's Gipson 1, Garza gr, woo, 3019 ft. Stanley's Schumann 1, Stephens Ranch subd, sp. Western Gulf's Vanegas 1, Garza gr, wocs, on squeeze job, 2743 ft. **Bastrop**—Teas' Grizzard 1, Graham league, drlg 5000 ft. **Bexar**—Blackburn's Miller 1, sur 324, sp. **Caldwell**—Artz's Campbell 1, Martinez sur, testing 1565 ft. Dye's Voight 1, Watkins sur, sp & sd. Tinkle's Blackwell 2, Roe sur, ru pump, td 2312 ft. **Frio**—Humble's Schley 1, sur 174, dr 3100 ft. **Guadalupe**—King's Rosenbrock 1, Duran sur, wor 430 ft. Marosis' Maierhofer 2, Peters sur, sd 600 ft. **Kendall**—Millican & Norman's Werner 1, sur 781, dr 765 ft. Reed's Marquart 1, Traviesso sur, dr 415 ft. **Kimble**—Phillips' Mudge 1, CCSD&RGNG sur, fsh 2003 ft. Plateau's Bolt 1, sur 42, dr 1100 ft; Davis 1, sur 44, drlg below sur csg; Hunger 1, sur 43, drlg 1600 ft. Rose's Gaebler 1, Beales sur, still lcn; Gaebler 2, Beales sur, ru. **Lee**—Pederson's Brown 1, Hudson sur, drlg 2450 ft. Tarver's Lawhon 1, Nantz sur, testing Ed lime 3100 ft. **Maverick**—Lockhart's Asbrook 1, sur 83, drlg 2800 ft. Wellington's Chittim B-1, I&GN sur, drlg 1800 ft. **Medina**—Cromwell's Tondrie 1, Rogers sur, dd from 1250 ft, td 1280 ft, drlg. D. K. J.'s Burell 1, sur 395, td 2046 ft, woo. Stieren's Hoeglin 1, sur 335,

PRACTICAL PETROLEUM ENGINEERS' HANDBOOK



By JOSEPH ZABA, E. M. M. Sc.
Petroleum Engineer, Rio Bravo Oil Company
and
W. T. DOHERTY
Division Superintendent, Humble Oil & Refining Company

For a number of years there has been a growing demand for a handbook containing formulae and other practical information for the benefit of the man working in the production and drilling branches of the oil industry. So great has been this need that many engineers have tried to accumulate their own handbooks by clipping tables, formulae and figures from scores of sources.

The co-authors of this volume discovered by coincidence that each had been for a period of several years accumulating practical data which through their collaboration appears in this book. Both of them are men who have not only received theoretical training but who have had many years of practical experience as engineers in dealing with every day oil field drilling and production problems.

As a result of this collaboration of effort the publishers of this volume feel that it is a most valuable contribution to oil trade literature.

Its purposes are distinctly practical. The tables, formulae, and figures shown are practical rather than theoretical in nature. It should save the time of many a busy operator, engineer, superintendent, and foreman.

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Chapter I — General Engineering Data
Chapter II — Steam
Chapter III — Power Transmission
Chapter IV — Tubular Goods
Chapter V — Drilling
Chapter VI — Production
Chapter VII — Transportation

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dr 650 ft. Ziegler's Saathoff 1, sur 231, sd 905 ft, not rec fish; Weimers 1, sur 274, sd 873 ft, to clear titles. **Travis**—Fallin's Anderson 1, McNutt sur, lcn. Goff's Cervenka 1, Pedro del Toro sur, lcn.

LAREDO DISTRICT

Duval—Anderson's Volpe 1, El Mesquite gr, wor. Appell's Rogers 1, El Mesquite gr, lcn. Hiawatha's Southland Life 11, sec 16, Ball Ranch subd, ru. Magnolia's Duval Ranch, sec 81, sp. Palmer's Gruy 1, sec 158, will abnd around 3200 ft. Stewart & Nye's Peters 1, sec 29, testing Cole sand. Wagner's Lampe 1, sur 497, drlg 1200 ft. **Jim Hogg**—Henshaw's Martinez 1, sec 38, set sur csg. Humble's Bass 2, Rafael gr, dr 4600 ft. Johnson & Robinson's Palacios 1, sur 230, dr 150 ft. **McMullen**—Allbright's Nueces 1, sur 119, testing Mirando snd 1202-13 ft. Barbara's Edrington 1, sec 79, pits dug, wor. Kirby's Chylek 1, Hernandez sur, rmg last rept, td 965 ft. Schimmel's Koutz 3, sur 5, woo abt 2000 ft. Spice's Edrington 1, sur 57, sp, wo wtr well. **Starr**—Graham's Gutierrez 1, por 88, dr 2650 ft. Hagan & Stewart's Salinas 1, Sacatosa gr, cor 1000 ft. Magnolia's Fee-Guerra, dr 1860 ft. Sun's Garza 1, por 82, cor 2750 ft; McKinney 1, sur 242, dr 4012 ft. Zimmerman's Starr 1, por 89, drlg 2347 ft. **Webb**—Jones' Bruni 1, Albercas gr, set sur csg. O'Byrne's Lacy 1, sur 2050, cor 1112 ft.

CORPUS CHRISTI DISTRICT

Bee—Atlantic's Courtney 1, Kerr sur, swabbing 3661 ft. Devonian's Maley 1, Coley sur, drlg 3500 ft. **Brooks**—Milam's Mestina 1, W. W. Jones subd, cor 1750 ft, last rept. **Calhoun**—Hiawatha's Roemer 2, Ogsberry sur, drlg below 6750 ft. **Goliad**—Sun's Shaper 1, Payne sur, cor 7080 ft. **Hidalgo**—Harding's Card 1, Hidalgo Canal Co. subd, ru. Harding-Pantano's Woody 1, por 69, wshg, perfs 5970-74 ft. Phillips' Flores 1, por 39, drlg 7200 ft. Wheelock & Collins' Temple 1, La Blanca & Llano Grande gr, drlg 6000 ft. **Jackson**—Magnolia's West 3-A, Musquiz gr, washing in, 5086 ft. **Jim Wells**—Coker's Albert 1, La Vaca gr, lcn. Howell's Stillwell 1-A, Collins subd, ru. Humble's Adams 1, Lopez gr, dr 5950 ft; True 1, Garza gr, drlg 3000 ft. Magnolia's Garcia 1, La Anima Sola gr, dr 3800 ft; Martin 1, sur 7, dr 6250 ft. Pratt & Browning's Stillwell 1, Collins subd, completing in 5300 ft snd, td 5305 ft. Shell's Blucher 1, Best sur, dr 6725 ft. Smith & McDannald's Rooney 1, Gallagher subd, dr below sur csg. Stewart's White 1, Los Altos Ranch, T. Bustillos sur, lcn. Transwestern Dunlap 1, sur 179 and 181, dr 4800 ft. **Karnes**—Arnot's Stead 1, blk 2, lcn. **Kleberg**—Pure's State 1, tr 522, stuck ds abt 9230 ft, last rept. **Lavaca**—McCord's Russek 1, Reynolds sur, sd 500 ft. Crosby's Graff 1, Jack sur, drlg 2400 ft. **Live Oak**—Gravis' Minnetex 1, blk 174, sp. Richardson's Reagan 1, Docharty sur, dr below 2250 ft. Wallace & Jones' Burrows 1, sur 138, dr 1650 ft. **Nueces**—Seaboard's Chapman 7, El Rincon de Corpus Christi gr, wor. Texas' Little 1, Little sur, ru. **Refugio**—Coronado's Rooke 1, Bonnie View subd, dr 5494 ft, tested sw. **San Patricio**—Mills Bennett's Ivey 1, Pauls subd, reworking, 5345 ft. Easterwood's Smith 1, Pauls subd, lcn. Morgan's Smith 1, Pauls subd, sp.

TEXAS GULF COAST

Brazoria—Glenn H. McCarthy's Street 1, Pearland prospect, D. H. M. Hunter sur, reported abn, no depth given. W. C. Neville et al's Houston Farms Dev. Co. 1, Rattlesnake Mound prospect, Perry & Austin sur, abn 7007 ft. Sterling's Kramer 1, flank well at Stratton Ridge, T. W. Grayson sur, dr shale 4244 ft. **Galveston**—Sun's Cade 1, Bolivar prospect, A. Dickson sur, set 9⅝-in csg 8242 ft, woc. **Grimes**—Hubert Holt's Greer 1, Carlos area, woo 2761 ft. **Harris**—S. G. Harrison's Lafferty Estate 1, sw of Clinton, abn 4515 ft. **Jefferson**—Humble's State B-8, in Gulf of Mexico, mim. **Matagorda**—Ohio Oil Co.'s Cornelius 1, North Markham prospect, P. C. Yarbough sur, dr shale 5709 ft. **Montgomery**—W. L. Todd's Martin 1, s of Montgomery, M. Landrum sur, dr shale 1080 ft. D. B. MacDaniel's Flemming 1, swc of county, Randall sur, dr shale 1460 ft. **Newton**—Republic's Sabine Tram Co. 1, Northwest Starks prospect, I. Garner sur, ru and sd. **Polk**—J. G. Mayo's Roberts 1, sw of Ace, J. F. De Rumayor sur, woc 60 ft. **Tyler**—Chapman Mineral's Angelina County Lbr. Co. 1, Emilee area, J. Conn sur, lcn. **Washington**—Mt. Selman Oil Co.'s Pohlmeyer 1, ne of Brenham, A. Kuykendall sur, lcn. Speed Oil Co.'s Makousky 1, Greenvine area, D. McIntyre sur, preparing to spud.

ROCKY MOUNTAIN STATES

COLORADO

Las Animas—Garcia Corporation's McClung 1, ne nw se 19-33s-61w, dr 2308 ft. **Mesa**—Continental Oil Co., California Co., and Amerada Petroleum Corp.'s Miller 1, sw sw nw 36-8s-91w, dr 6380 ft. **Moffat**—Morapas Petroleum Co.'s Coles 1, se nw se 1-3n-92w, dr 2740 ft. **Park**—South Park Oil Co.'s Lemarr 1, ne ne se 34-11s-75w, dr 6050 ft. **Prowers**—Continental Oil Co.'s Ruby 1, cne nw 31-21s-44w, dr 5065 ft. **Pueblo**—Eden Oil & Gas Co.'s Horse Creek Land & Cattle Co. 1, sw se 29-19s-64w, dr 232 ft. **Rio Blanco**—Buford Oil Co.'s Government 1, cne ne 20-1n-91w, dr 2685 ft. **Routt**—Moore, Craig et al's Irwin 1-X, csw nw 33-7n-85w, dr 125 ft.

MONTANA

Big Horn—Buzetti & Corkins' Government 1, ne nw 23-1s-32, mim. **Choteau**—Security Petroleum Co.'s Johnson 1, cne 23-26n-3e, dr 1991 ft. **Teton**—California Co.'s Unit 1, ne se sw 26-27n-9w, dr 256 ft. Gulf States Oil Co. & Zodiac Oil Co.'s Wallenstien 1, sw sw sw 5-27n-9w, dr 2510 ft.

NEBRASKA

Garden—Bergman & Bull's Fee 1, 12-16n-42w, ruc. **McPherson**—Pawnee Oil Co.'s Patented 1, cnw nw 28-18n-31w, mim rotary. **Scotts Bluff**—Houston Petroleum Corp.'s Judd 1, nec ne ne 12-55n-57w, ru. **Sioux**—Felmount Oil Corp.'s Kinion 1, csw ne 22-27n-55w, dr 5100 ft. Union Oil Co.'s Buckley 1, nwc se se 15-28n-55w, whipstocking past drill stem 4700 ft, td 6843 ft.

NORTH DAKOTA

Williams—California Co.'s Kamp 1, cnw ne 3-154n-96w, preparing to run acid to free drill pipe stuck in lime on bottom at 10,281 ft.

Young mechanic expert in gas, gasoline and Diesel motors. Can furnish complete shop equipment including lathe and machine tools. Desire position maintaining or operating motors and equipment. Also consider rough-neck-mechanic or pumper-mechanic. Can travel anywhere. Giles Jowers, 546 Kayton Avenue, San Antonio, Texas.

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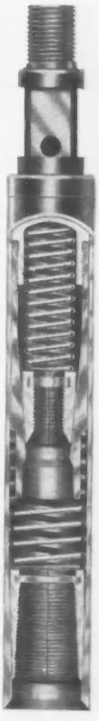

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Slips are available for every size of rod and coupling—even special ones for worn rods and boxes, polished rods, and pins.

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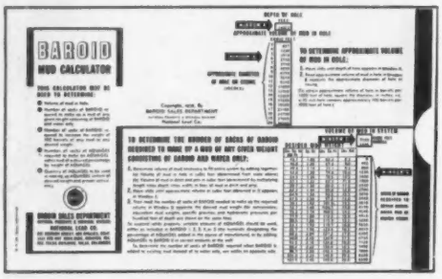
MUD CALCULATOR
Baroid Sales Department

Designed to assist drillers in performing many necessary calculations in the use and control of drilling fluids, the Baroid Mud Calculator has just been prepared by Baroid Sales Department of National Pigments and Chemical Division of National Lead Company. This calculator is a celluloid device working somewhat in the manner of a slide rule. It is 8 inches wide and 5 inches high.



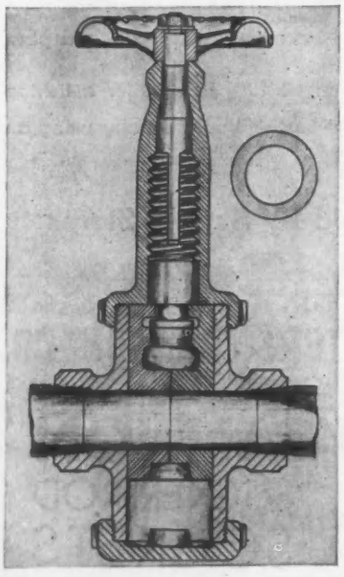
Baroid Calculator.

Among its various functions the mud calculator enables the operator to calculate quickly and easily the volume of mud in the hole, the amount of Baroid required to make a Baroid and water mud of a desired weight, and the amount of Baroid required to increase the weight of any mud to a desired point. The calculator also aids in determining the quantity of material to be used in making up an Aquagel-water mud of a desired percentage by weight of Aquagel. Finally it aids in determining the quantity of Aquagel to be used in making up an Aquagel-cement of desired weight and proper consistency.

Volumes are given in cubic feet and barrels, while weight of mud is given in pounds per gallon, pounds per cubic foot, specific gravity, and pounds per square inch per hundred feet of depth. This mud calculator may be obtained from Baroid Sales Department offices at 837 Jackson St., Los Angeles, California; 1111 Second National Bank Building, Houston, Texas; and 502 Tulsa Building, Tulsa, Oklahoma.

GATE VALVE
Monat Valve and Forge Company

Monat Valve and Forge Company, 1003 Bessemer Building, Pittsburgh, Pennsylvania, has recently developed a packless, cylindrical gate valve, suitable for high as well as low pressures and temperatures.



Monat packless "Stream-Flow" gate valve.

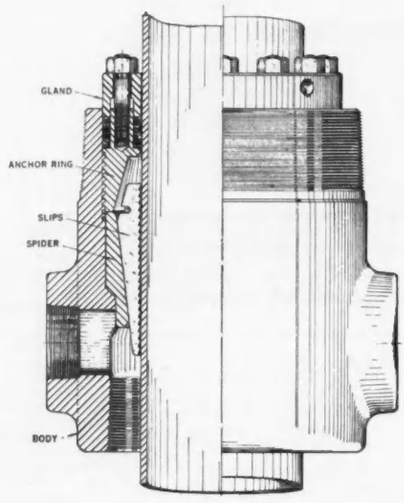
This new, rugged valve, designated as the Monat "Stream-Flow," contains the salient construction features of both gate and plug valves but none of the disadvantages of either. There are no cavities and friction is eliminated. It is available in sizes ranging from ½ to 8 inches in the standard metals. Also in special metals and alloys for lines handling corrosive liquids and gases.

The body of this new valve carries a cylindrical bore, at right angles to the line of flow. A cylindrical gate is moved up and down by means of a screw in the valve bonnet, and is prevented from turning by a key in the cylindrical bore. The run of the valve conforms in shape and size to that of the pipe—namely that it is circular.

No packing is required. The only operating part in the line of flow is the gate itself. A cap on the bottom of the body and the removable bonnet permit cleaning the valve while it is in the line.

CASING HEADS
The National Supply Company

The National Supply Company, Toledo, Ohio, has developed a slip suspension type casing head designed to support and pack off long strings of casing. The packing is located above the slips and is entirely independent of the weight of the casing. A patented packing arrangement makes this head suitable for high pressure service. Two rows of narrow asbestos packing are compressed by a single gland. The packing is easy to apply and can be compressed by one man using a small end wrench.



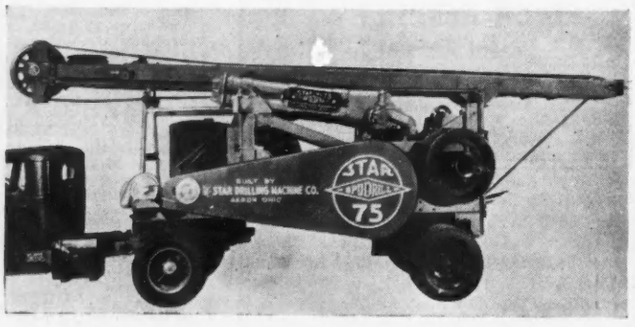
National Type JH-1 Casing Head.

When both ends are threaded the head is known as type JH-1. The type JH-3 is identical in design with the type JH-1 except for a flange at the upper end of the body. The flange is of the proposed A.P.I. specifications which permits bolting directly to tubing head or blow-out preventer. A blow-out preventer can be attached to the flange and all drilling performed with this equipment in place, after which it can be removed while the cement is setting.

DRILLING MACHINE
The Star Drilling Company

The Star Drilling Machine Company, Akron, Ohio, announces the Star No. 75 Spudrill. The new unit is an all-steel drilling machine, with 100 percent anti-friction bearings, free running reels, air-cooled brakes and a shockless spudder. It has a capacity to drill up to 3500 feet.

One of the features of this new machine is a shock ab-



Star No. 75 Spudrill

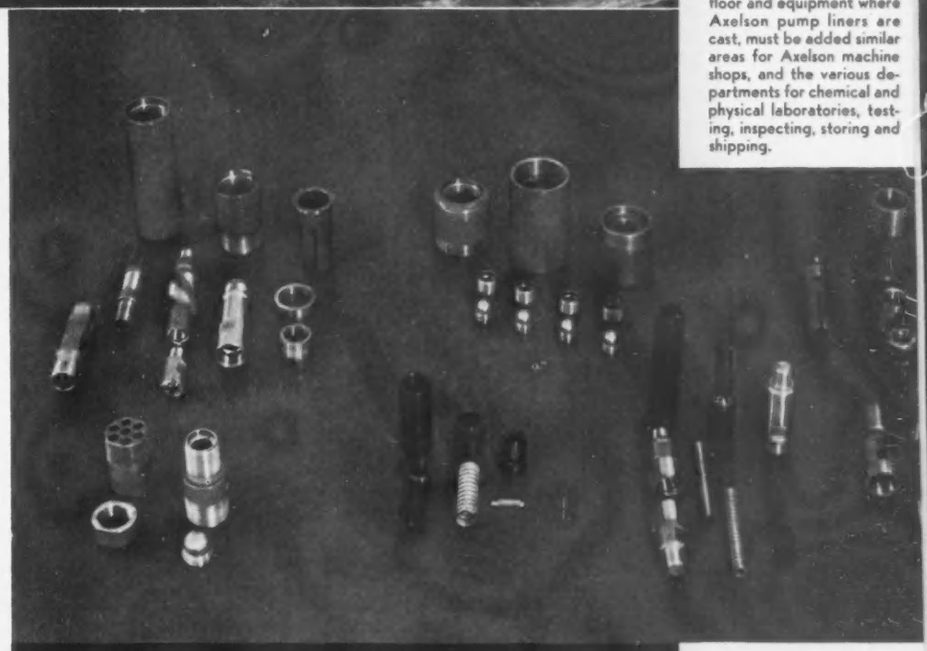
To this expanse of foundry floor and equipment where Axelson pump liners are cast, must be added similar areas for Axelson machine shops, and the various departments for chemical and physical laboratories, testing, inspecting, storing and shipping.

LIFE DEVOTED TO HELPING YOU LIFT OIL

The most important part of a pumping well is the ten to twenty feet of pump at the bottom. That's where your cost per barrel is fixed. Low cost is shown only by pumps that stand up and deliver against depth, heat, shock, sand, weight, pressure and corrosion—and all this with the least power.

More than a million man-hours a year are devoted in the Axelson factories to making pumps that meet these tough conditions. Axelson means dependable pumps in every oil field in the world — in every language — because for forty years the two Axelson passwords have been "details" and "precision." These are the qualities that make the parts that insure the whole.

Wherever oil producers are most determined to reduce time and costs, Axelson pumps are always used. They embody the results of a lifetime of the study of wells and pumps—of pioneering in pump improvements and the design of special machines to realize the improvements—of standardization that brings interchangeability — of laboratory control and continuous inspections for accuracy. Put an Axelson pump in the bottom of your well and you have a guaranty of low cost and long life.



Hundreds of precision parts — thousands of controlled operations — come together in twelve types of Axelson deep well pumps, providing a pump of any size or length for any conditions in any well in the world.

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THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

sorber which reduces the shock loads transmitted to the machine by the drilling line in order to protect the line itself as well as the machine. The unit has been built to meet an insistent demand for a portable drilling rig capable of fast moving and quick rigging up, efficient in operation and dependable in action.

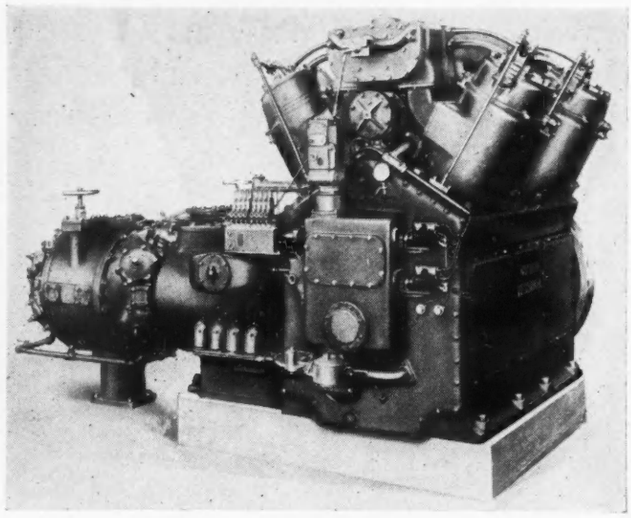
COMPRESSOR UNIT

The Cooper-Bessemer Corporation

The Cooper-Bessemer Corporation, Mount Vernon, Ohio, has recently placed on the market the new type G-MV compressor unit, a two-cycle, gas engine driven compressor combining V-type power cylinders set vertically, and compressor cylinders arranged horizontally. This addition to the company's line of engines and compressors is rated 100 horsepower per cylinder at a conservative speed of 300 r.p.m.

Extreme compactness serves to make the G-MV compressor readily transportable, reduces the amount of floor space and material necessary for its housing, lowers foundation material expense, and makes for welcome ease of installation. Shipped completely assembled, except for attaching the compressor cylinders, its factory alignments need not be disturbed and the unit is quickly and easily made ready for operation.

Designed primarily for compressor operations which include compressing air and gas, pumping wells by air and gas lift, delivering oil and gas to main lines and transporting them through long pipe lines, repressuring oil sands, and similar operations, these G-MV units also have numerous industrial applications.



Cooper-Bessemer Type G-MV Compressor Unit

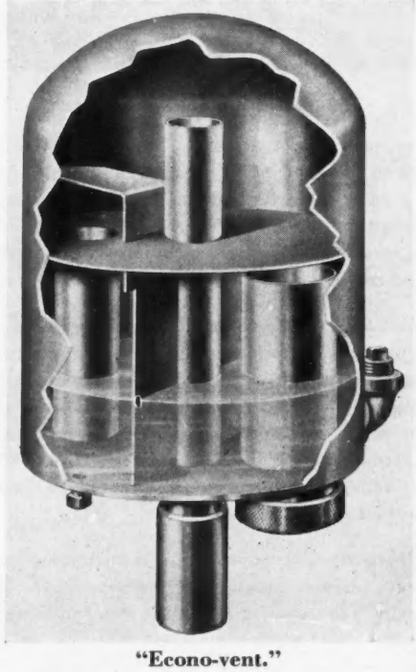
TANK VENT

Lion Manufacturing Corporation

A new type tank vent, employing a patented liquid seal principle which eliminates all mechanical parts, is announced under the trade-name "Econo-vent" by Lion Manufacturing Corporation, 2701 Belmont Avenue, Chicago. The vent is designed for use on bulk storage tanks containing gasoline, naphtha or other volatile liquids; and, according to the manufacturers, reduces existing evaporation loss 50 to 75 percent.

"Econo-vent" is said to be the first 100 percent liquid sealed vent ever developed. The manufacturers, however, point out that the "Econo-vent" has been proven by 5 years of actual operation and metered tests conducted by leading bulk-storage operators.

The accompanying cut-away photo - drawing clearly illustrates the liquid seal principle. As the storage - tank is filled, air escapes up through the center pipe, down through the left-hand pipe, and is forced through the liquid seal and out into the atmosphere through a screened vent in the right hand pipe.



"Econo-vent."

When, on the other hand, gasoline or other fluid in storage is withdrawn from the tank, the liquid seal is raised by suction, through the left-hand pipe, into the upper chamber, creating a partial vacuum in the tank. Then, when a rise in temperature causes expansion, pressure equalizes the vacuum, and liquid seal drops to lower chamber—thus taking care of expansion without releasing vapors from the seal.

Abercrombie

PRESSURE GAUGE

For Mud, Water, Oil, Air, Gas, or any Liquid

This Pressure Gauge, built on an entirely new principle, gives you the following practical money and trouble saving features:

Dampens pump pulsations over entire pressure range without adjustments.
Large scale figures and divisions give long-distance visibility.
Unaffected by external vibrations.
Liquid being measured cannot enter gauge unit.
Extremely rugged construction. Designed for oil field drilling and similar service.

Literature and prices upon request

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This Week with the Industry's EQUIPMENT SUPPLIERS

The National Supply Company in New Quarters at Fort Worth

The National Supply Company's Texas division sales office, embracing Texas, Louisiana, Arkansas and New Mexico activities, has been transferred from the Fort Worth National Bank Building to the Sinclair Building, Fort Worth. The company occupies the seventh floor of the latter building, and all of its offices have been air-conditioned. C. C. Cartwright is vice president in charge of the Texas division.

M. C. Davis in Mountain Area for Rector Company

Rector Well Equipment Company has appointed M. C. Davis as company representative in the Rocky Mountain territory. Davis is working out of Casper and Parkerton, Wyoming.

Southern Engine & Pump to Distribute Le Roi Company Units

Southern Engine & Pump Company, Houston, recently acquired the exclusive distribution for Le Roi Company, Milwaukee, the products comprising engines, compressors and electric generating sets for general oil field, drilling, pumping and pipe line applications.

Southern Engine & Pump Company will maintain sales offices at Houston, Dallas, Kilgore and Brownwood, and will offer service facilities through the Houston and Kilgore stores. Complete stocks of engines and repair parts will be carried at Houston and Kilgore, and stocks will be added at other strategic points.

Further announcement has been made that Linn K. Park of Houston has joined Southern Engine & Pump Company and will handle engine sales.

LINN K. PARK
Handling Engine Sales for Southern Engine & Pump Company

Sperry-Sun Appoints Roberts Pacific Coast Regional Manager

Dwight C. Roberts has been appointed regional manager for the Pacific Coast region, to have supervision of all Sperry-Sun Well Surveying Com-

DWIGHT C. ROBERTS

W. H. EMERSON

Direct Sperry-Sun Well Surveying Company's activities on the West Coast from headquarters at Long Beach, California.

AN ADVERTISER TELLS WHY HE DOES IT

Most of those concerns that have carried regular advertising campaigns from long ago experience the many benefits to be derived from advertising. However, it is seldom that a purchaser of an advertised product realizes that through consistent advertising the manufacturer is able to make and distribute his products at a cost considerably less than the unadvertised products. The following article written by A. A. Buschow, president of The Bridgeport Machine Company, explains the value of advertising from the consumer viewpoint, and it is reprinted here with the hope that it might serve to expel the impression held by some that advertising adds to the cost of merchandise. The article is reprinted by the courtesy of The Bridgeport Bulletin.

"To make a statement concerning the wisdom of paying good money for the purchase of space in any publication for the purpose of telling a business story may seem unnecessary. If the procedure increases the operating expense more than some other business method, it is a failure, and furthermore the cost is not justified unless both seller and buyer gain.

"The opportunity of finding a buyer is worth money to the seller, and likewise it is an advantage to the buyer to obtain knowledge concerning where to buy and what is the fair price. The one interest may make a profit and the other a saving; thereby both gain.

"The present time is a buyer's market. It is because more is offered for sale than is needed. Better quality, lower prices, improved service or more attractive terms follow. The time to buy is when the other fellow wants to sell. 'Wants to sell' is sweet music to the ears of the prospective buyer.

"Generally our memory is short and if we are not continually reminded we may soon forget where we made a purchase and why. It is impractical to try out everything, consequently, it follows everyone is influenced either by their own experience or by statements which sound reasonably true.

"Knowing something of interest and passing it along to as many people as possible, at the lowest cost, is really a proper definition of advertising. 'Of interest' is mutual and that's what makes it worth while. Keeping properly informed and holding down operating costs are essential to success. Furnishing information on the one hand, and on the other keeping fully informed, are present day needs of business life. To induce more people to buy is an advantage, and any legitimate method which gets results is justifiable. Proper advertising does not increase the expense of operations, therefore will continue to be an important assistance in bringing about the closing of business transactions."

pany's activities in the West Coast area. His headquarters will be at Long Beach, California.

W. H. Emerson has been appointed district manager of the Long Beach district with headquarters at Long Beach.

McCartney Handles Export and Eastern Sales for Clark Bros.

According to announcement by J. B. O'Connor, vice president of Clark Bros. Company, Robert R. McCartney is now handling export and eastern coastal sales and engineering matters for the company.

R. R. McCARTNEY
New York Representative of Clark Bros. Company

Before joining Clark Bros. in April of this year, McCartney had been associated for a number of years with the Gulf Oil Corporation in New York. Prior to this employment he spent 10 years in the pump and engine division of Worthington Pump & Machinery Corporation, after graduating from the Pratt Institute of Mechanical Engineering in 1924. McCartney has his headquarters in the New York office of Clark Bros. Company.

Westinghouse Consolidates Transport and Generator Units

R. B. Mildon, vice president in charge of the Pittsburgh district works of the Westinghouse Electric & Manufacturing Company, last week announced consolidation of the company's transportation and generator divisions.

Frank Howell Stohr, manager of the generator division, has been named manager of the combined transportation and generator divisions, while Frank B. Powers, formerly manager of transportation engineering, will serve as engineering manager of the combined divisions.

Standco
NO-SMOKE
STANDCO BRAKE LINING
Nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 1940, Composite Catalog.
Standard Brake Lining Co.

Baker Oil Tools Builds Unique Rolling Exhibit

"An Oil Tool Education on Wheels" is a most appropriate description of the new demonstration trailer designed by Baker Oil Tools, Inc., to be used as a traveling exhibit displaying practically its entire line of specialty oil tools, with emphasis being given to the new Baker Cement Wash-Down Whirler Float Shoe and Guide Shoe.

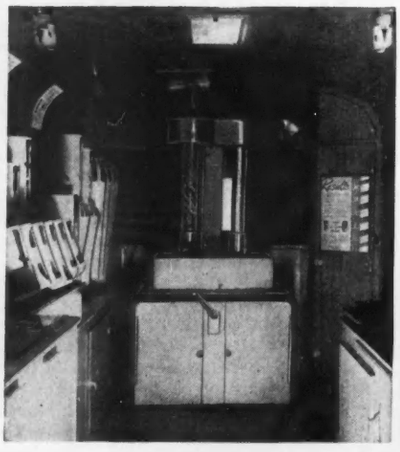
The trailer has an over-all length of 18 feet and weighs, when ready for the road, approximately 4620 pounds. It is pulled by a Ford V-8 coupe and cruises at 40 miles an hour. Both car and trailer are finished in the yellow and blue, which have long identified the Baker organization throughout the world.

Inside the trailer are scale models of virtually the entire line of Baker oil tools, including an interesting demonstration of the new Baker Cement Wash-Down Whirler Float Shoe and Guide Shoe. In this demonstration the Wash-Down and Up-Whirler action is illustrated through the use of a glass-walled action unit that visualizes exactly what happens down in the hole during landing and cementing operations when this new whirler principle type of equipment is used.

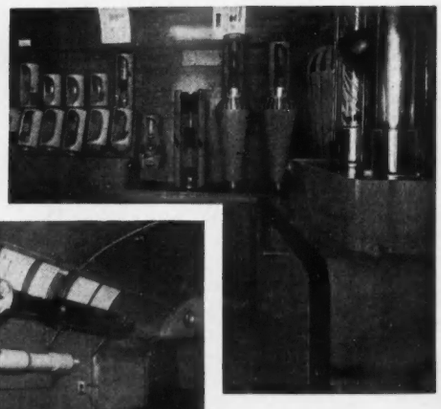
Among the other items on display are included cut-away models of the Baker line of guiding, floating and cementing equipment; Baker metal "Petal" cementing basket; Baker Cement retainer; Baker rotary wall scraper and wall sampler; Baker cable tool core barrel; and the Baker Model "B" Bakwik drill pipe float.

In addition to the display there are overnight accomodations for two people. During the day the bed is converted into a divan. A table, and refrigerator are among the built-in "extras" and provision has also been made for a disappearing silver screen

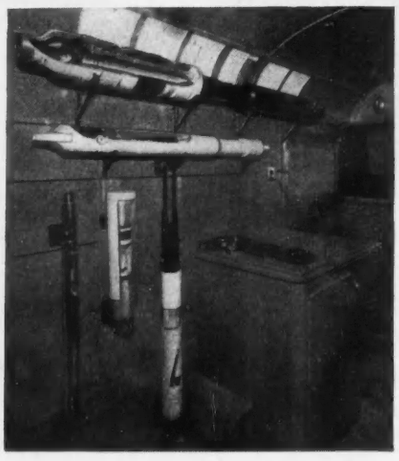
(Above) Showing exterior view of custom made Baker Rolling Exhibit. Both trailer and coupe are painted the well known Baker colors of yellow and blue.



(Left) One of the highlights of the exhibit is this unique demonstration unit illustrating the effective whirler action of the Baker Cement Wash-Down Whirler Float Shoe and Wash-Down Whirler Guide Shoe.



(Right) Interior view showing cut-away models of Baker Cement Retainer, Baker Wall Scraper, Baker Model "B" Drill Pipe Float, Baker Cable Tool Core Barrel and Baker Cement Dump Bailer. Cabinet containing the ice box is to right, and in the back end can be seen part of the divan which at night makes up into a double bed.



(Above) Interior view showing special built scale models of some of the units comprising the Baker line of Cement Guiding, Floating, and Cementing Equipment.

and space for a 16 m.m. projector to be used in showing motion pictures illustrating the design, construction, operation and practical field use of various Baker products.

The interior equipment of the trailer includes a heavy-duty electric light plant that produces 110-volt A. C. current—the same as city current. This gasoline motor-driven power plant can easily light 25 60-watt lights and the current produced is used to operate the Baker wash-down whirler demonstration unit as well as for lighting and heating purposes.

Well in advance of the trailer's visit, an announcement of the time of its arrival is to be posted in supply stores along the route. The itinerary on which the exhibit has already embarked, will include more than half of the 48 states, and it is estimated will cover more than 40,000 miles. It is also anticipated that two years will be required to contact the various domestic oil fields which Baker serves.

Worthington Makes Changes in Oil and Gas Engine Sales Staff

J. C. Barnaby, former manager of Worthington Pump & Machinery Corporation's oil and gas engine application division at Buffao, New York, and responsible for engine sales in the central division, is being placed in charge of special engineering work covering engine research and design, and will devote his entire time to this activity.

W. E. Wechter, in charge at New York of the corporation's engine sales in the Atlantic division, has been transferred to Buffalo to succeed Barnaby. He will be assisted by J. F. Hecking, who continues in his present capacity of assistant manager of the oil and gas engine application division.

In the Atlantic division, oil engine sales will be covered by H. C. Wood at New York, while W. L. Russell, at Harrison, New Jersey, will take over the gas engine sales. This latter assignment is in addition to Russell's present responsibilities as manager of the Eastern division of Worthington oil and gas power sales.

Robert J. Davis Heads The Johnston & Jennings Company

Robert J. Davis has been elected president of The Johnston & Jennings Company to succeed Tracy J. Calhoun, who has been elected chairman of the board.

Davis has been a director of the company for the past 2½ years, and is a grandson of the late Robert Johnston of Cleveland, who was one of the founders of the business in 1884.

Hart H. Fleming continues as vice president.

The Oil Conservation Engineering Company, manufacturer of tank fittings and oil industry specialties, was merged with The Johnston & Jennings Company some years ago, and is now operated as the OCECO Division.

Frank M. Drane of Drane Tank Passes Away

Frank M. Drane, 62, president of Drane Tank Company, died August 21 at his Fort Worth residence. He had been ill since suffering a heart attack late in May. He was a veteran tank dealer and manufacturer, and resided at Tulsa prior to the establishment of headquarters in Fort Worth in 1932.

Squeaks from the Bull Wheel

The End of August

I had a little dog. I called him August. August was fond of jumping at conclusions, especially at the cow's conclusion. One day he jumped at the mule's conclusion. The next day was the first of September.

His Choice

Bill's girl is tall and slender,
Mine is plump and low;
Bill's girl wears silks and satins,
Mine wears calico.
Bill's girl's a little sporty,
Mine is kind and good;
Do you think I'd trade my girl for Bill's?
You know d—— well I would!

Youthful Pessimism

It was the first time he had traveled alone, and his mother told him to write his name and address on a card and keep it in his pocket. He wrote:

"In case of accident this was Johnny Jones."

High Art

"Where's that helper you took on—the chap that used to be an artist?"

"Haven't you heard? Soon as he laid a couple of bricks, he stepped back to admire his work."

Godly Grocer

In a book published many years ago by Barnum himself he tells a story which he probably felt was typical of business as he found it in his youth. It concerns a grocer who was a deacon and who was heard to call downstairs before breakfast to his clerk:

"John, have you watered the rum?"
"Yes, sir."
"And sanded the sugar?"
"Yes, sir."
"And chicoried the coffee?"
"Yes, sir."
"Then come up to prayers."

Awkward Age

"And how old are you, Bobbie?"
"I'm just at the awkward age."
"Really? And what do you call the awkward age?"
"I'm too old to cry and too young to swear."

Explained

"I know why mosquitoes bite you more than they do other people."
"Why, son?"
"'Cause you have high blood pressure and they don't have to suck so hard."

Sincere

Our Scotch General Manager says that he recently received some birthday cards, two of which were from insurance companies, wishing him many more birthdays. He said, "I appreciate these cards. I know they are sincere."

Crooks?

"Do you enjoy novel reading, Miss Prim?"

"Oh, yes, very much. One can associate with people in fiction that one wouldn't dare to in real life."

Not So Romantic

"Did you get any replies to your advertisement that a lonely maiden sought light and warmth in her life?"

"Yes, two from the electric light company and one from the gas company."

Drastic Change

"Father," said the minister's son, "my teacher says that 'collect' and 'congregate' mean the same thing. Do they?"

"Perhaps, my son; perhaps they do," said the clergyman. "But there is a vast difference between a 'congregation' and a 'collection'."

He Knew

Is there an Encyclopedia Britannica in the hotel?

There is not, sir; but what is it you wish to know?

Commuter

At a certain college the male students were not permitted to visit the resident lady boarders. One day a student was caught in the act of doing so and was called on the carpet.

Said the Dean: "Sir, the penalty for the first offense is 50 cents, for the second, $2.50, for the third, $5, and so on up to $15."

In solemn tones the trespasser inquired: "How much would a season ticket cost?"

Pinched

The teacher sent one of her scholars to buy a pound of plums from a grocer, and as she handed the little girl a dime, said:

"Be sure, Mary, before buying the plums, to pinch one or two, just to see that they are ripe."

In a little while the girl returned with a flushed face and a triumphant look in her eyes. Handing the teacher the bag of plums, she placed the dime on the desk, and exclaimed:

"I pinched one or two, as you told me, and when the man wasn't looking I pinched a bagful."

Warning

When Smith took a friend home to dinner, his wife gave him strict orders that he must not offer his guest sherry, as they had none in the house. But Smith forgot the injunction.

"Won't you have a glass of sherry, old man?" he said. The guest turned very red, and stammered that he never drank it.

"What rubbish!" said Smith. "I know that's not true. Do try it."

The guest looked disturbed.

"No, no. I would much rather not," he said imploringly and turned redder than ever.

When the evening was finished, and the guest had gone, Mrs. Smith said to her husband: "Why on earth did you press him to take sherry when I kept kicking you under the table to remind you there wasn't any?"

Smith looked at her, "It wasn't me you kicked, my dear," he said.

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